Investigating the Information Systems Heterarchy

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Abstract

This paper assesses how one large information systems (IS) organisation, Capgemini, is changing in response to the increased globalisation of software development practices. It posits the emergence of a new form of multi-national enterprise (MNE) – the heterarchy - that draws on theoretical antecedents in the field of international business. Data is gathered from two extended case studies of IS projects and the cases create new insights into the structures and behaviours of IS MNEs that are adapting to the demands of global systems development. The paper identifies four primary dimensions of impact – cultural, economic, operational and organizational – on IS MNEs and suggests how such organisations are evolving. It concludes that 'offshoring' may no longer be as relevant a term to describe how global IS resourcing is addressed.

Key words

Offshoring; globalisation; heterarchy; grounded theory; multi-national enterprise; international business

Introduction

This research investigates a particular form of globalisation: the practice of offshoring information systems (IS) services. Typically, IS offshoring uses low cost labour in developing countries to provide products and services for use in developed economies. IS offshoring is now deployed extensively, and is often regarded as a mature and cost-effective approach to application development and maintenance (Lewin and Peeters, 2006). Suppliers of offshore IS services have graduated from simple sourcing models - such as providing individuals to do specific tasks - to complex and sophisticated cross-border contractual and resourcing arrangements with their customers (Soota, 2002; Murthy, 2004). New project and organisational structures are required to take account of the dislocation of staff, which, in turn, demands new ways of managing development activities. Cultural traditions are often disrupted, both for offshore practitioners who come to reside in an onshore location and for the onshore individuals who encounter them (Tsotra and Fitzgerald, 2007).

The development of the IS offshore industry has resulted in the creation of large, IS-oriented, multi-national enterprises (MNEs). Some of these, such as Accenture, originated in industrialised economies and have been trading for many years. Other offshore IS providers, such as Wipro, have originated more recently in newly-industrialising countries and typically export services to developed economies. Although a relatively recent phenomenon, research on offshoring of IS services has increased significantly in recent years (Carmel and Abbott, 2007; Jarvenpaa and Mao, 2007; Lacity and Rottmann, 2009; DeDrick *et al*, 2011). Globalisation, MNEs and international business have long been the focus of research, although, to date, MNE theory has not been widely applied to offshore IS MNEs, or to this sector as a particular example of international business.

Since MNE theory has long featured as a central part of international business studies, it may assist the understanding of on-going changes in the structure and composition of firms that provide offshore IS services, and thereby provide insight into the forms of distributed multinational IS organisations that may emerge. This research uses a particular international business construct – the hypermodern heterarchy (Hedlund, 1986) – to provide insight into the changing structure of a specific actor in the global economy – the technology firm Capgemini – and draws conclusions that may apply to other IS MNEs. Capgemini is viewed here as an '*onshore*' IS MNE - a recent manifestation of systems integration (SI) or management consulting firms which typically provide offshore software development as part of a wider portfolio of '*multi-shore'* consulting, technology and outsourcing services. Other similar firms

include IBM, Hewlett-Packard and Accenture, which have sizeable operations in newly-industrialising countries ('*offshore*'). Such firms are undergoing fundamental, systemic change which includes a renegotiation of how strategic and operational activities are conducted, and which, in some cases, involves ceding ownership and control to offshore affiliates. These firms are, in effect, redefining ('*re-architecting*') the basis on which the governance of their international operations is carried out (Rangan and Selgul, 2009).

While the conclusions of this paper are not normative, the outcomes may provide part of the theoretical basis for the development of a workable governance model for all IS MNEs. The research comprises a case study approach using grounded theory techniques to analyse respondent interviews. The epistemological approach is interpretive and socio-technical, following the stance of Hirschheim and Newman (1991) who note that social context often gives rise to the most interesting and problematic aspects of IS. It also extends the base of qualitative research in international business (Doz, 2011) by applying the existing construct of the heterarchy (Hedlund, 1986) to a modern international business phenomenon.

Following a description of the nature and scope of the research in this section of the paper, the literature on offshoring and international business, including a description of the construct of the heterarchy, is reviewed. Section three describes the research method, case studies and empirical data, and this is followed by a description of the main findings from the research. A general discussion of the results and a summary of conclusions, contributions and opportunities for further related research are identified in the final section.

IS Offshoring and MNEs

Offshoring and IS offshoring

Offshoring of manufacturing and services is an accepted business practice, widely deployed in developed economies (Crinò, 2009). Offshoring occurs when a firm engages resources from a different country – most often an economy where the cost of labour is significantly lower - to conduct business activities on its behalf.   Historically, physical proximity between specialised workers was essential: offshoring - made possible by advances in transportation and communications technology - allows the severance of this link (Grossman and Rossi-Handsberg, 2006). In addition to providing access to lower labour costs, offshoring offers the potential for access to specialist skills, greater flexibility and access to international markets.

Offshoring tends to be linked to outsourcing. The Economist (Jan 2013) reports that 67% of all US and European outsourcing contracts involved offshoring workers.

However, offshoring continues to be a sensitive topic since it is often interpreted as a mechanism for transferring domestic jobs overseas leading to it being a high-profile political and policy issue, touching on some of the most fundamental aspects of economic theory. Indeed, the aspect of the literature on offshoring that has tended to get most publicity is that which covers the impact on home-country employment, despite evidence to suggest that the impact is mixed, or difficult to measure. For example, in a study for the IMF on the impact of service outsourcing in the UK, Amiti and Wei (2005) find that " *job growth at a sectoral level is not negatively related to service outsourcing*. Crinò (2009) notes that while material offshoring worsens wage inequality between skilled and unskilled workers and raises the risk of job losses, "*Service offshoring exerts at most small negative effects on total employment, and changes the composition of the workforce in favour of high-skilled white collar employees*."

IS offshoring is a relatively new form of offshoring of services and involves distributed software development and maintenance, a refinement of the broader definition of offshoring as encompassing: "*activities both internal and external to the firm for the purposes of serving home country or global markets*." (Kenney *et al*, 2009). Offshoring to affiliates located outside the home country constitutes captive offshoring, and offshoring to third parties is defined as offshore outsourcing. As originally IS offshoring usually involved non-affiliated third parties, it has most frequently been addressed within the body of literature that concerns outsourcing of IT function. Dibbern *et al* (2004) provide a comprehensive review of this literature and note that it is one of the main sources for identifying antecedents and theoretical frameworks that could be applied to IS offshoring. Relevant conceptual and empirical bases are found in the works of Lacity and Hirschheim (1993); Willcocks and Fitzgerald (1993); Lacity and Willcocks (1998) and Carmel and Agarwal (2002).

Research on IS offshoring as a phenomenon distinct from broader IS and outsourcing themes is not as widespread, although a wide range of perspectives exist from Farrell (2005) who asserts that IS offshoring offers huge benefits to organisations and the economy, to Levy (2005) who presents a more cautious view of its advantages. Early research on IS offshoring highlights the commercial drivers, such as labour arbitrage opportunities (Lacity and Willcocks, 1995; Farrell, 2005). Carmel and Agarwal (2002) and David *et al* (2007) describe risks and tensions inherent in distributed software development across political and geographic

boundaries. Others focus on the skills, expertise and organisational structures required when application development is distributed (Tolentino, 2002; Doh, 2005; Oshri *et al*, 2007).

Practitioners are generally well served by academic research on outsourcing and offshoring (for example, Lacity *et al*, 2009) as well as by industry analysts such as Forrester and Gartner, while Gopal *et al* (2003), Murthy (2004) and Gannon and Wilson (2007) assess IS offshoring from the perspective of the IS offshore provider. Garud *et al* (2006) provide an in-depth longitudinal analysis of Infosys, a major Indian-based IS MNE. Cultural issues feature strongly, and the construct of cultural difference (Johanson and Vahlne, 1977) has found some application in the field of IS (Tsotra and Fitzgerald, 2007; Gannon & Wilson, 2008).

MNEs and the heterarchy

Bartlett and Ghoshal (1998) define 'multinational', 'global', 'international' and 'transnational' businesses.   'Multinational' businesses are those that tend to be decentralised, and where subsidiaries have the autonomy to respond quickly and efficiently to local demands, and to adapt to local conditions. The 'global' business, by comparison, is driven by the need to achieve global efficiency, and tends to be more centralised in its strategic and operational working. The 'international' business is one that adopts a strategy of transferring and adapting core expertise and technology to foreign markets.   The 'transnational' organisation has 'multidimensional strategic requirements' – that is, it is not defined by any single dominating attribute, but is driven by simultaneous demands for global efficiency, national responsiveness and worldwide learning, and exhibits traits of each of the international, multinational and global firms.

The construct of the heterarchical organisation (Hedlund, 1986) describes a networked organisational model. A strategic difference between this and traditional organisational paradigms is that the heterarchical firm seeks to exploit competitive advantage from any part of the global organisation, and not just from the '*home*' market. The structural differences are more complex, and posit that the heterarchical firm has many centres; that subsidiaries and their management are equally capable of contributing strategic thinking and value; that organisation is normative (that is, collaborative in nature) rather than coercive, and generally that each part of the organisation is a reflection of the whole. This latter point implies that every member of a heterarchical organisation is aware of all aspects of the firm's operation. Hedlund coins the term '*hypermodern MNC*' to suggest that existing '*modern*' theories and

notions used in international business thinking were inadequate, and uses '*heterarchy*' as an antithesis to hierarchy. Hedlund's multi-national corporation (MNC) is synonymous with the multi-national enterprise (MNE).

Research from the 1990s onwards has tended to place less emphasis on a hierarchical view of the MNE (headquarters controlling subsidiaries directly) and more frequently takes the view of the MNE as a network of differentiated intra- and inter-firm relationships (Tolentino, 2002). This perspective assumes a distributed labour division among subunits of the MNE arranged in an integrated network configuration.

The antecedents of heterarchy lie in the notions of exploration/exploitations, co-invention and co-evolution and organisational ambidexterity. March (1991) maintains that an appropriate balance between exploration and exploitation is a primary factor in survival and prosperity while Schreyogg and Sydow (2010) see organisational ambidexterity as a core dynamic capability as it refers to adaptable fluidity and efficient stability achieved by designing organisational subunits that are efficient or innovative. He and Wong (2004) suggest that ambidextrous organisation exhibit dynamic capabilities that are needed to blend exploitation and exploration. Graetz and Smith (2008) argue for the relevance of ambidextrous, or dual forms of organising, that '*provide buffering contexts enabling explorative project teams to work independently yet cooperatively alongside the traditional management hierarchy, drawing on its resources experience and expertise'*. They see heterarchies as illustrating modes of organising that emerge from the dualistic tension of these competing belief systems. Graetz and Smith argue that heterarchies comprise minimal hierarchy and maximal organisational heterogeneity and so reflect the key properties of duality thinking. They base this on Hedlund's description of multinational corporations as increasingly tolerating messy organisational structures that blend dimensions and permit '*inconsistencies, overlaps and non-institutionalised ambiguities'*.

Ambidextrous organisations embrace incremental and revolutionary change and create an environment in which established and emerging businesses can coexist (Harryson et al 2007). Harryson et al. (2008) argue that ambidexterity requires both heterarchy and hierarchy. They maintain that innovation is clearly related to exploration as it is about searching for new knowledge to develop new capabilities that secure future innovations. Exploitation is about the use, and future development of existing organisational knowledge. Ambidextrous organisations can do both, handling creative processes and innovation commercialisation.

Harryson et al. also state that heterachical, that is, non-hierarchical organisations, stimulate knowledge generation and acquisition.

Although this literature on outsourcing and international business provides a solid departure point for this research, there are limitations. First, as it is relatively new, there is little research on offshoring as a form of international business, and on the strategic management, organisation and operation of offshore MNEs (Kenney *et al*, 2009). In a special edition, the editors of the Journal of International Business Studies describe it as "*this emerging area of globalization and international managerial practice*" and write of the need to locate the topic in the international business research tradition (Kenney *et al*, 2009). This is indeed a rich seam, and research describing the evolution of the multi-national corporation (Porter, 1986; Doz and Prahalad, 1991; Ghoshal and Bartlett, 1990; Kogut and Zander, 1993), has potential in analysing the maturity of offshore IS firms.

Second, there is relatively little research on offshoring of IS. The editors' comments on submissions received for the special issue of MIS Quarterly in June 2008 noted that: "*the 43 papers reveal that rigorous research in IS offshoring is still in its nascent phase. Most research is still qualitative and/or exploratory. Indeed, most of the extant literature in the area is opinion-based, prescriptive, and/or anecdotal.*" (King and Torkzadeh, 2008)

Third, although globalisation is a much used term, there is little research on recent global trends, and on the impact of greater coupling of capital and resource in an increasingly interconnected world. Buckley (2002) considers that the pace of research on international business and globalisation has slowed, and the momentum that had developed in the latter part of the last century has vanished. In a plea for revitalisation, he describes the need for '*further explanation (or deconstruction) of the concept of globalisation*', particularly concerning the nature and organisation of the MNE, an area in which there has been significant change (Doh, 2005). Perhaps most surprising is the limited application of frequently-cited international business constructs and themes to disciplines outside international business. This provides a starting point for the current research, which seeks to use an antecedent in the field of international business to inform the study of IS MNEs. The empirical context is provided by two offshore software development projects conducted by Capgemini, an IS MNE. These are described in the next section.

Research method and empirical data
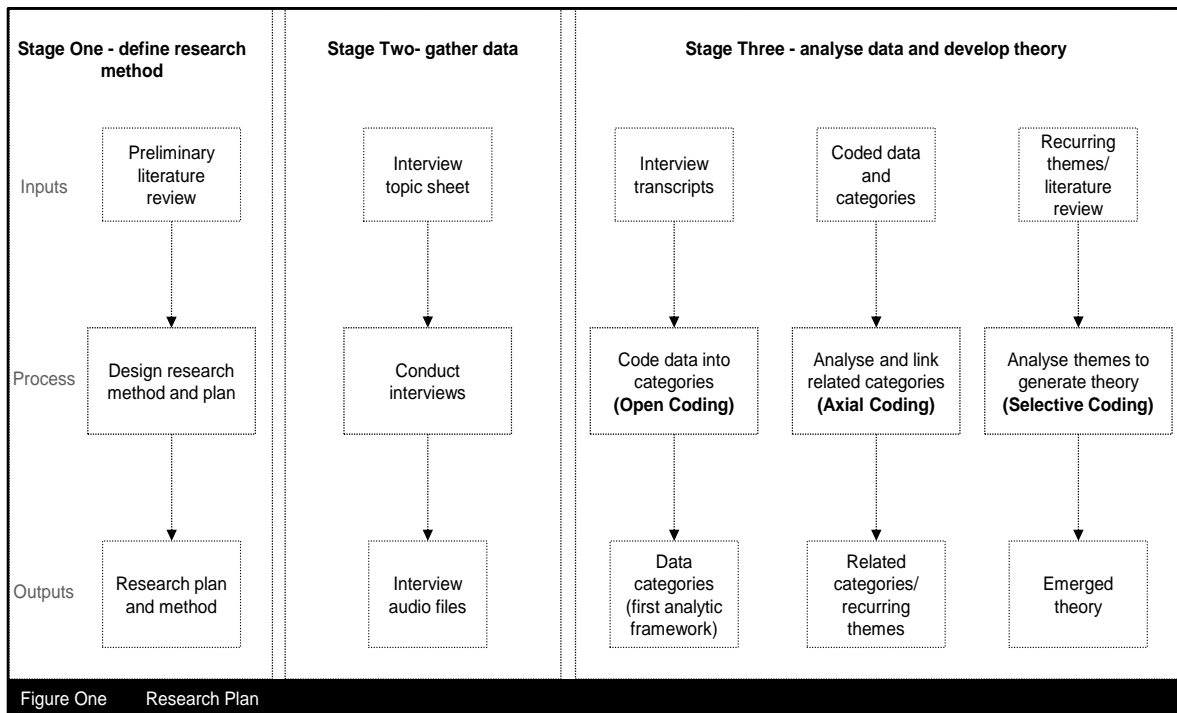### Research goals, method and design

This research starts with the premise that the phenomenon of IS offshoring is changing the way in which IS MNEs provide services to their customers. For example, some IS service providers have adopted a global delivery model rather than a purely domestic delivery model (Garud *et al*, 2006). The purpose of this research is to assess the extent of these changes and seeks to determine, for a particular exemplar of this type of organisation, how Capgemini is changing its business in response to the emergence of widespread offshoring of IS services. Supplementary research goals include assessing the dimensions of change, such as the effect of offshoring on operations, people, business practices, profitability and so on. The intent is both to identify the main dimensions of impact and to determine the extent to which they can be applied to Capgemini.

Because the research focuses on a single organisation, it is not expected that conclusions pertaining to the industry in general can be inferred, and the question of whether the changes affecting Capgemini are similar to those being experienced by other IS MNEs is outside the scope of this study. Nevertheless, it seeks to provide context for others wishing to answer this question.

The research uses grounded theory techniques to analyse respondent interviews (Glaser and Strauss, 1967) as it is appropriate for development of a context-based, process-oriented description and explanation of the phenomenon of IS offshoring. Orlikowski (1993) provides a rationale for using grounded theory that applies to the proposed research. First, the inductive nature of the method is appropriate as there is no dominant theory of offshoring to date (although there are, of course, theoretical antecedents). Second, a detailed understanding of the organisational context for offshoring is essential to developing a robust set of conclusions. Third, a research method that facilitates a process-based description of change in its organisational context seems appropriate to the study of offshoring, which is heavily process-based and organisationally-dependent. The output of the research is a conceptual framework and related propositions (Eisenhardt, 1989), and does not comprise a nomothetic theory.

The research plan developed for this research programme is illustrated in Figure One. It is a three-stage process that involves planning (stage one); data gathering (stage two); and data analysis (stage three). The main inputs and outputs for each stage are highlighted. The macro-level 'actor' and primary unit of analysis is the organisation or firm – in this instance Capgemini as a representative of organisations that provide IS services, onshore and offshore.

	Stage One - define research method	Stage Two- gather data	Stage Three - analyse data and develop theory		
Inputs	Preliminary literature review	Interview topic sheet	Interview transcripts	Coded data and categories	Recurring themes/ literature review
Process	Design research method and plan	Conduct interviews	Code data into categories **(Open Coding)**	Analyse and link related categories **(Axial Coding)**	Analyse themes to generate theory **(Selective Coding)**
Outputs	Research plan and method	Interview audio files	Data categories (first analytic framework)	Related categories/ recurring themes	Emerged theory

Figure One   Research Plan

Data Collection

Two offshore IS projects are used here to provide a body of empirical data. It is important to place this in context, since the unit of analysis of the study is the firm. First, the success or failure of the actual projects studied or their impact on the businesses for which they were conducted is of secondary concern. Similarly, the fact that software development projects are considered - which are bounded in duration and unlike the offshoring of a complete business process – is of less importance since the unit of analysis is the firm.

The projects were conducted over a period of 18 months in separate organisations in the financial services industry: one a UK retail bank, a subsidiary of an international institution, and the other a global insurance broker headquartered in the USA with its European headquarters in the UK. In each instance the primary offshore outsourcing provider was Capgemini, a global systems integrator headquartered in Paris – a typical IS MNE with a dispersed body of workers onshore and offshore (predominantly in India). Other IS firms were involved in more peripheral roles. One project (Project Mars) involved the development of a package-based system to support a new lending product and the other (Project Europa) was a custom development of an existing system used to provide retail brokerage for customers across Europe. Both developments were initially of a similar scale – over 10,000 days of development effort – and used IBM's Rational Unified Process (RUP) development

methodology, although in different technology environments (Java for the bank; Assembler and COBOL for the insurance broker). On both projects offshore developers from Capgemini's Indian operation were located on site in the clients' offices in the UK and Belgium for at least part of the time.

Although the projects are philosophically similar (Orlikowski, 1993), drawing on the same basic application development approach of use cases, separation of process and data, and iterative development phases, this is of secondary importance. Nonetheless, selecting two Capgemini projects allows the continuous comparison of evidence, and helps control the conceptual level and scope of the emerging theory (Orlikowski, 1993). At a more basic level, observations made in one project context can be compared and contrasted with observations in the second site.

Primary data sources in the form of semi-structured interviews were gathered from client and Capgemini staff directly involved in the selected projects, in the UK and in India. The topic sheet for these interviews is included in Appendix One. Seventeen interviews were conducted over a period of eight months, in various locations in the UK, and by phone with respondents in India. The people interviewed included business executives (those responsible for decisions relating to the operation of the business areas in which the projects were conducted); IS staff (those responsible for planning and operating the IS function in the organisations considered); onshore and offshore IS practitioners (Capgemini staff in Mumbai and Reading responsible for conducting the projects); and other project participants (those engaged at first hand in the development projects, particularly the project management team). In addition, written data sources – project reports, memos, e-mails and letters - were collected. Interviews were supplemented by additional phone calls to validate points of fact. In addition, written data sources – project reports, memos, emails and letters - were collected and analysed. Walsham (1995) notes the importance of '*capturing' people's interpretations effectively in the course of a normal conversation'*. To facilitate this, all interviews were recorded and supplemented by written notes.

Data Analysis

Data analysis followed a strict grounded theory approach, starting with the open coding process (Strauss and Corbin, 1998). Transcribed data from the interviews and other selected documents were input as text files to NVivo software. This was analysed line by line and

assigned to categories – often to multiple categories – that best described that element of data which consisted predominantly of a sentence in the text, or a paragraph that summarised the interviewee's response to the researcher's question.

The primary output from open coding was a set of categories, with data grouped against these categories. Four main categories emerged as the primary *dimensions of impact* of offshoring as experienced by participants in the projects under consideration. These were:

- cultural, covering aspects of offshoring that have primarily a cultural interpretation or significance;

- economic, addressing impacts of offshoring that affect the actors commercially and politically;

- organisational/skills, concerned with how offshoring is affecting the structure of the organisations, and the skills of practitioners onshore and offshore;

- operational, concerned with factors that pertain to how offshoring impacts the processes, methodologies and tools of the actors considered.

The bulk of the data was classified into these four categories. A small number of additional categories were identified to cover outlying points of view. These included comments on historical and future perspectives of IS offshoring, and risks and success factors of IS offshoring, but these data were subsumed into the major categories in later stages of open coding. The principal key for the analysis at this stage of the research was by *dimension of impact*. At a purely quantitative level, most of the references at the end of open coding were assigned to the *organisational/skills* category (229 out of 693 references). This was followed closely by the *economic* category (205 out of 693 references). The lowest number of references was in the *cultural* category (113 out of 693 references). References to the literature provided an initial validation that the data was for the most part representative of wider study in the field, although the lesser importance of the cultural dimension appeared at odds with some prior research.

The second stage of the analysis - axial coding – involved analysing the categories that emerged from open coding to determine relationships between dimensions of impact of offshoring and stakeholders in Capgemini affected by offshoring. As the axial coding proceeded, embryonic outcomes became firm and redundancies eliminated. A further refinement that followed from axial coding involved a switching of the dimensional and firm categories in the framework. The initial choice at the outset of axial coding had placed the

dimensions of impact as primary categories, but once the sub-categories had been condensed, it seemed more logical to swap the axes of the matrix. This had the effect of focussing the emerging concepts on the firm and the individuals in the firm – a precedence of conceptualisation that allowed thinking to crystallise around the research question of understanding the impact of offshoring on Capgemini and its practitioners. This, in turn, accentuated the primary themes that had previously emerged.

Thus, the embryonic outcomes that emerged at the start of the axial coding process firmed to the following outcomes by the end:

1. Cultural issues associated with offshoring are not defining characteristics in the practice of IS offshoring in Capgemini.

2. A primary economic impact is the rebalancing of risk between onshore and offshore parts of the Capgemini organisation.

3. From an organisational perspective, Capgemini is rebalancing skills across locations rather than simply downsizing onshore staff numbers.

4. Capgemini's practitioners perceive the operational impact of IS offshoring to be low, as new operational practices, tools and methods are being introduced with little difficulty.

The final stage of analysis - selective coding - largely consisted of extracting the main themes identified, elaborating them in description and in substance, and validating them against data. This cycle of conceptualisation, elaboration and validation took place over an elapsed period of seven months and led to the development of the themes into theory, and linked explicitly the data to theory. For example, the idea of a new form of IS MNE was cross-referenced to respondents' statements in the interview transcripts. In this way, the link between data and theory was confirmed. A further validation was provided by repeated literature reviews.

Discussion

Taken collectively, it is clear that a subtle and gradual change of the Capgemini organisation is taking place. While no obvious antecedent presents itself to categorise or describe this change completely, the construct of the heterarchy (Hedlund, 1986) offers some insight into how Capgemini is re-architecting its operation and governance. In essence, the firm is dispensing with the more traditional hierarchical way in which it was previously organised, and is beginning to exhibit cultural, economic, operational and organisational dimensions that are embodied in Hedlund's construct of the heterarchy. These dimensions are discussed next.

Cultural dimensions

Culture and cultural difference was a constant sub-text for respondents throughout the research. While some of the discussions in this research were framed to provide viewpoints regarding cultural interaction among players, others with no explicit cultural reference returned data that had cultural undertones. Cultural differences did give rise to tension on occasion in both Mars and Europa, and demanded organisational response. However, the most significant aspect of the cultural dimension observed was seeing how little it mattered: on both projects other issues, such as late delivery and poor quality of software from local suppliers, were more serious.

At a strategic level, the research highlights the fact that both onshore and offshore elements of the Capgemini organisation understand the importance of the cultural dimension of distributed development. In fact, it seemed as if Capgemini was adjusting to the fact that the dominant culture in its organisations is as likely to be the offshore culture as any other, simply because offshore workers are likely to outnumber onshore workers soon. The offshore director for Capgemini in the UK had this to say: *"It's going to become - maybe I'm going to point to something here - but it's the 'browning' of Capgemini that's going to happen. I suspect that the management recognises this. I went to the global kick off of Capgemini in January this year and there were more Indians there than any year previously and I think Capgemini has to accept that."*

Getting onshore workers to understand and work with culturally diverse offshore colleagues was helped by the fact that English was the main language spoken on project Mars and project Europa. Similarly, co-location of project staff helped eliminate cultural misunderstanding. Both Mars and Europa projects differed greatly in their approach to integration and communication, and this had a significant bearing on outcome. On project Mars, nearly all of the offshore team came onshore to the client site at some stage of the development: on project Europa, few were present on site, and they were isolated. The Mars project manager onsite felt this was critical to success: *"We had nearly all - not absolutely everyone - but nearly all of the offshore people were at some stage on site. And that really helped integrate the team. They all knew what it is we were building. They were all very comfortable with the culture, and they had what I call the vision, which is very important."*

Surprisingly, the cultural impact of offshoring on 'onshore' practitioners proved much greater than that on offshore practitioners coming to work in onshore locations. It might be expected

that the cultural impact to be greater for the individual who travels rather than the individual who stays at home. However, on both projects, Capgemini's onshore practitioners found it harder to deal with cultural differences when exposed to colleagues from offshore locations. Much of this stemmed from onshore views about the lack of competence of offshore colleagues. While the research data suggest that the offshore resources are highly competent and can do the things onshore workers can do, it also highlighted suspicion of offshore competence from onshore workers. Take, for example, the cultural overtones in the Mars project manager's response to a question about the onshore practitioner perspective of offshore colleagues: "*I think ... initially, there were a lot of concerns around which way the project was going ... because there were, at that time in the UK, there were a number of failed distributed delivery projects.*"

Capgemini's offshore practitioners' views of the cultural divide were much less charged than those of their onshore colleagues. Almost all the interviewees noted the challenges associated with the different cultural viewpoints of onshore and offshore workers. One of the junior Indian developers on project Mars makes a telling remark, with unconscious humour: "*Generally ...we could never understand English humour at first. You know, definitely we could get along and speak one to one because, you know, people do speak English there (in the UK). But humour, it's quite different or something. We weren't able to grasp every time what was said in the meeting or something. But slowly, as you stay along and, you know, interact with people... I think the key to understanding is if you interact with different people and other stuff you can slowly get to understand like what they're actually meaning or something.*" It may be that the offshore practitioner is less sensitive to cultural issues because there is no implied threat.

Regarding the experiences of Capgemini's Indian offshore practitioners who worked in the UK, there is perhaps an obvious point that emerges from the data: the cultural impact on offshore workers is the same as that for anyone who travels abroad and experiences a different culture and environment. The offshore worker experiences new ideas and concepts; and on return these enrich not only the individual but also the wider workforce. This resonates with D'Mello's (2005) views on issues of identity and related tensions, and highlights wider social issues that result from globalisation.

In summary, the fact that the cultural aspect of globalisation is relatively well understood shapes, to a large part, the view of cultural impact that emerged: that while there are some

cultural differences that give rise to tension, these are minor compared to other challenges. The primary cultural difference involves a blurring in the distinction between onshore and offshore. It became apparent in the course of the research that Capgemini has recognised the need to change to be successful in an industry where distributed IS development is now the norm; and that cultural adaptation is a significant dimension of this. This represents an increasingly apolitical stance, indicating a desire to be seen as truly global organisations rather than originating from, or operating in, any one country.

This leads to an interesting and – in the context of this research – a fundamental conclusion. As Capgemini becomes less location-specific, the distinction between onshore and offshore becomes less relevant, and the terms meaningless. The commonly accepted definitions of the words, which relate primarily to the physical location of the IS resources, become redundant. This applies generally to the traditional taxonomy in the literature: words like '*subsidiary*', '*host country*', '*home country*', '*headquarters*', are less relevant in the heterarchical construct, which is peer-to-peer, collaborative and mobile. This is more profound than the familiar phenomenon whereby large multinationals adapt their services to suit the culture of the host country (for example, MacDonald's burger chain offering local flavours when they expand into a new country). These organisations are decidedly '*international*' in Bartlett and Ghoshal's taxonomy, in which national organisations have freedom to modify products and services that originate in the centre, but the centre remains dominant and retains a close identification with the country of origin. The heterarchy is truly distributed, and the offshore or onshore parts of the organisation have a peer relationship.

Economic implications

In this research, the respondents highlighted how their employer's business models were changing. The key way in which this change is manifested relates to the fact that Capgemini looks to exploit competitive advantage from any part of the organisation, and not just from the 'home' market. They have lots of centres – the project structures and locations for both project Europa and project Mars provides clear evidence of this – and there is less of a sense of differentiation on hierarchical boundaries than on cost and skill. Increasingly, on Mars and Europa, managers from any location were invited to contribute to practical and strategic discussions regarding the projects, and differentiation diminished. Most of all, a generally collaborative approach was prevalent – and in fact Capgemini coined a phrase – the Collaborative Business Experience – to embody this approach.

As Capgemini adopts a hybrid approach to offshoring that involves the use of joint onshore/offshore teams, there is a rebalancing of the development contact, with each part of the enterprise (onshore, nearshore and offshore) sharing risk and reward. In essence, there is a more equitable distribution of risk between onshore and offshore parts of the organisation, and new commercial models are being introduced to support this. This is different to the current environment, where typically the risk and reward is assumed disproportionately by either the onshore or offshore division and aligns with the heterarchical model, which assumes that all development centres are equal, and capable of agreeing their own terms.

This rebalancing of the development contract was illustrated in a discussion with the Europa delivery director, and concerned the extent of the risk assumed by the offshore division of Capgemini on the project. The traditional model is for Capgemini to use the Indian offshore business as a cost centre with a more sophisticated, risk-bearing onshore front-end. The Europa project delivery director proposed a different business model that involved sharing the risk – one that was readily accepted by the offshore organisation: '*Yes, India is still run as a cost centre, so the UK or France or the front office country takes all the risk. ...We were trying to resolve this for smaller projects, to transfer risks, and at the time it seemed to me that this was a new way of working but one that they (the Indian colleagues) were absolutely up for. It was an explicit conversation: "Look, guys, we're not going to take the risk on this because this is a fixed price deal - you guys will have to bear it. Are you happy and comfortable with that?" And their view was, well great, finally somebody's taking some notice of us who are actually doing things we want to do.*'

This represents a significant change in the way that the offshore phenomenon is affecting Capgemini. It is independent of the pricing mechanism – the fact that the contract is fixed price or not is irrelevant here: what is important is how the risk is shared between onshore and offshore components of the same organisation. Rather, the change represents a significant maturing of the offshore components and recognition on the part of the onshore part of the organisation that it can no longer dictate the terms of IS engagements with offshore colleagues. It is an equalising factor – an implicit acknowledgement of the realignment of the firm from hierarchy to heterarchy.

Organisational implications

In assessing how offshoring impacts the way IS organisations are structured, and the skills they now need, the research indicates that Capgemini is rebalancing staffing between onshore

and offshore locations.   This is resulting in a slowdown of recruitment in onshore organisations and an increase in the pace of ongoing redundancy, as described by Capgemini's account director: "*We know - and we're already doing it – we are going to have to significantly remodel our business... even the architects we're having to make redundant at the moment. ...there'll still be project management, programme managers, analysts.....but the UK business is shrinking from a technology perspective.*"

On project Mars and project Europa, Capgemini chose to retain account management skills and specialist technical skills onshore. This was to allow them to build and maintain deep customer relationships – in effect, to allow them to speak the language of their customers. The delivery director on project Mars described these skills as: "*...the bits which ... require customer intimacy and intimacy with the business users. Those are the bits that, you know, people are almost presuming that they cannot be moved offshore.*"

On project Europa, the account manager identified the elements of her proposal that were most successful: "*We provided them with a solution that gave them the ability to talk about those additional bits of functionality to a set of people who understood their business pain.*" Her delivery director agreed, and noted that there are some technology skills that will also be needed onshore: "*I think there'll always be early adopter technologies where people who are familiar with them will be of value locally. I think it's likely that strategic consultancy, IT strategic consultancy skills…project management skills and business analysis type skills...*"

Despite anecdotal evidence gathered from respondents, there appears to be little change in the numbers of staff remaining onshore. For example, the size of the technology organisation onshore at Capgemini is not greatly reduced, nor is there wholesale layoff of onshore staff: although decreasing as a percentage of overall headcount, staff numbers in Capgemini's subsidiaries in the UK, USA and Nordic countries have remained broadly stable over time.

This is evidence that supports the emergence of a distributed and collaborative business model. In alignment with structures suggested by a heterarchical model, Capgemini is rebalancing skills across locations rather than simply downsizing onshore staff numbers.

This research shows that a hybrid development approach – a characteristic of the heterarchical development model – is preferred. On project Mars, for example, the bank stipulated that offshore resources be brought onshore to the bank's premises for the duration of the project, as described by the Mars programme manager: '*They felt that it wasn't an option to do any of it offshore. It would have been a preference for Capgemini to do components offshore, but*

they (the bank) weren't prepared to consider that because they felt that the timescales were too quick… and the risks involved in doing that would be too great. And they felt they didn't have the maturity as an organisation to do that. So they were absolutely clear they didn't want anything built offshore.'

This aligns with outcomes from research on how dispersed IS development teams create socialisation in globally distributed settings, and how collaboration is improved by use of face-to-face meetings in conjunction with other socialisation activities and processes over the duration of the project lifecycle (Oshri *et al*, 2007).

Operational implications

It was clear from the research that Capgemini is adopting new tools and operational processes as it adopts a distributed multi-shore development model. These comprise less formal methodologies and toolsets that accommodate global distributed development across multiple sites (a global development model). However, these tools are basic for the most part, and often include software downloaded from the Internet. New processes, for example to conduct code reviews with developers, and new methodologies, for instance to incorporate remote prototyping, are similarly being deployed. However, in the case studies in this research, these changes were basic, and comprised web-based tools like Instant Messenger. The project manager describes the process of code review: *'The only way we all kept in contact was Yahoo! And it's the only way to just maintain contact and you know, sometimes you'd just be cutting and pasting components of code and saying, 'How do you think this looks like?' or 'What do you think?' and it's great.'*

Similarly, few formal standards were in place, and those that existed were not strictly adhered to. Developers chose their own approach, with little apparent sensitivity around security, as described by a developer on the Mars project: *'we now have a standard toolset that we're supposed to use. All our J2EE components used Star Team (for change control) … and the guys in Mumbai just VPN'd in and used it … effectively, we got exemptions to do it our own way, which was maintain it on the client's site and we would VPN in and do it.'*

The rather informal use of methodology and tools on both the Mars and Europa projects hides the fact that all of the organisations involved in the development – users, onshore, nearshore and offshore – were closely networked and operated with a good deal of consistency and efficiency. The use of tools like Instant Messenger emphasises the immediacy of the interaction, and was complemented by the adaption of existing methodologies to cope with the

new (distributed) environment: on the Mars and Europa projects, Capgemini had invested in building a distributed toolset and methodology to account for the fact that the operational impact of offshoring affects all aspects of the development life cycle. This illustrates a resourcefulness and agility within formal frameworks.

Further implications

The research indicates that Capgemini will not necessarily find the evolution from hierarchy to heterarchy easy. Nor, possibly, will its peer organisations, particularly those at an early stage of development and only now coming to understand the implications of a truly global market for IS service provision. This is a difficult transition for most onshore organisations, and that there is little information available to guide them: '*The newly integrating nature of this global labor market has strategic and tactical implications for companies and countries alike. Information and insight about it are sparse, however, and executives and policy makers have little of either for making the decisions they face.*' (Farrell *et al*, 2005, p.93)

Moreover, there is no definitive model: the heterarchy is not entirely uniform. The world is not flat, as Friedman (2005) has described it: it is bumpy and uneven, containing all sorts of inequalities, inconsistencies and irregularities, and one size does not fit all. For the Mars and Europa projects, for example, the recruitment and resourcing process was novel and problematic, as described by the Capgemini UK account manager: '*it was difficult because it was a new process. So it was difficult identifying the right skills and getting the handshake between the UK and Mumbai working effectively. ... so we had somebody managing this, more or less full time, for about two weeks, two or three weeks, setting up the process, setting up the documentation around it, so there was clarity around who'd been interviewed*'

This led to delays in the project start date for both projects, something that was complicated by the fact that the public processes to facilitate offshoring were not optimised, and required significant client as well as multi-shore organisation involvement. For example, the UK's Home Office was not geared up to accommodate large scale offshoring in the UK, and the Capgemini project manager for Mars had to spend a good deal of time resolving these issues: '*'Yeah, there were (difficulties bringing developers to the UK from India) and we had to write letters to the Home Office explaining what the contract was. We had to give them copies of the contract. ... Initially, we got the visas for too short a period, and so we had to have people who went offshore. We sent them back to Mumbai, so that they could get visa extensions. So that was quite complicated and costly and disruptive.*'

Conclusions

It is clear that a new organisational form is emerging for Capgemini that exhibits the essential qualities of the heterarchy described by Hedlund (1986). This construct does not describe this new form of MNE perfectly: much has changed since Hedlund described it. In particular, the pace of globalisation has accelerated, and its nature and profile greatly debated. IS offshoring in 1986 was at an early stage of development, and bears little resemblance to the phenomenon today. Although instinctively grasping the statelessness of the heterarchical MNE, Hedlund nonetheless defines the strategy of the firm in terms of 'home' markets, an irrelevant concept for the modern heterarchy: *"The heterarchical MNC differs from the standard geocentric one both in terms of strategy and in terms of structure. Strategically, the main dividing line is between exploiting competitive advantages derived from a home country base on the one hand, and actively seeking advantages originating in the global spread of the firm on the other."* (Hedlund, 1986, p.20).

His notion of heterarchy implies differentiation – somewhat similar to the '*differentiated network*' (Rugman and Verbeke, 2003). The modern heterarchical firm is decidedly undifferentiated, deploying its resources in a manner dictated not exclusively by location (for example, from a '*centre of excellence'*) but by a mix of factors including cost, availability, location, proximity to the client and strategic intent (for example, by the desire to expand a presence in a particular country). A good example of this is provided by the use of Capgemini's Accelerated Development Centres on project Europa: resources from France, Holland, India and the UK were deployed to optimise cost and expertise. Similarly, the rebalancing of project risk on project Mars is giving rise to a new commercial model in Capgemini to accommodate heterarchical operation. It acknowledges that its traditional hierarchical business models are changing to a more equitable global distributed development business model. The flexible approach towards development toolsets and methodologies on both Europa and Mars projects typifies modern development techniques. It is, moreover, entirely consistent with the heterarchical construct to the extent that the development infrastructure (telecommunications, tools, methodologies) can be defined as heterarchical. The Internet is stateless, networked and (mostly) immediate, and the collaborative toolsets that comprise Web 2.0 technologies are collaborative, peer-to-peer and instant. Finally, the rebalancing of skills across distributed locations is consistent with the concept of a heterarchical enterprise, which recognises that low-cost offshore development on its own does

not necessarily meet client demands; nor does aggressive labour arbitrage on its own represent a wise competitive stance.

Contribution and limitations

The theoretical and practical contributions of this research are twofold. First, the research uses an explanatory construct from the field of international business and applies it to a case study in the field of IS. This has the effect not only of validating the construct, but also of illuminating the topic being researched: in this instance, the contribution validates the construct of the heterarchy and shows its continued ability to explain how an IS MNE is adapting to changes in its industry. Second, this study has direct relevance for other IS organisations engaged in offshoring. If it is accepted that the heterarchy is a form of organisation into which Capgemini is evolving, then it is useful for comparable organisations to be aware of typical organisational and behavioural attributes associated with this model. For example, the conclusion that identifies how resources are being rebalanced across geographic boundaries could provide guidance in implementing such resource placements.

However, this study does not claim to develop theory on offshoring: it has a narrow focus, and the instances of operation of the firm in question is limited to two projects. Many questions are unanswered: for example concerning the applicability of these findings to captive organisations, or how roles and practices are assigned across client and third party participants in offshore development.

The most straightforward opportunity for extension of this research is to evaluate how well the model of the heterarchy extends to other IS MNEs, both onshore and offshore. Secondary evidence from respondents suggests that they also are becoming heterarchies. This is because the strategy for both onshore IS MNEs and their pure play counterparts is now focused on building solid customer relationships in local markets, while retaining the efficiencies and disciplines that come from centralised control. The onshore IS firms are also changing strategy: to compete with the structured, centrally-driven offshore organisations, these firms are developing development '*factories*' in offshore and onshore locations that are modelled on the offshore organisations' '*global*' strategy. In effect, onshore and offshore IS firms are now indistinguishable in strategic intent, and each has co-opted elements of the other's strategy (Garud *et al,* 2006).

This research extends the growing body of research on offshoring in the computer services industry. It acknowledges that IS offshoring is now a mature and growing industry in its own

right, and is developing characteristics of its own. Perhaps the most salient aspect of this maturity is that '*offshoring*' is no longer as relevant a term to use to describe how global IS resourcing is addressed. The area for future research identified in this paper represents a narrow view on an increasingly broad topic: according to Beverelli (2007), the study of offshoring is the study of how globalisation affects individuals. Since the pace of globalisation is quickening, it is to be expected that the pace of offshoring will also increase. As offshoring changes – whether in response to technical, economic or other stimuli – the opportunity for wide-ranging research will grow, and new insights will benefit those who have an interest in it.

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Appendix One – Sample topic sheet for shaping unstructured interviews

The primary technique for collecting empirical data is semi-structured interviews with participants in a Capgemini offshore project. Written data sources – project reports, memos, e-mails and letters and so on - are analysed as appropriate. Data collection focuses on context, technology, key players, and change process, and includes information on:

- the business environment, covering the nature of Capgemini's business, the macro-economic context in which it operates, the prevailing business strategies, the business operating models and the organisational structures and governance;

- project detail, covering the scope and objectives, business drivers and imperatives, project plans and timescales, organisation and governance, resourcing plans and the risks and constraints. Also, the rationale for an offshore approach, covering the resource considerations, financial considerations, risk profiles, and options considered; and the project development environment, covering the development approach and methodology, development toolsets, change control, infrastructure and interfaces with the other parties;

- issues directly associated with offshoring, including cultural and other difficulties and tensions arising, resourcing issues, supplier and sourcing issues and end-user interface issues, and the impact on organisation, covering the perceived acceptability of the offshoring approach in terms of quality, cost and cultural alignment.

Potential questions and topics

- Overall narrative of the programme? Business objectives?
- IT organisation at the time programme started at client? Now? Vendor selection process?
- Methodology and approach to development?
- Technology environment? Specific technology issues?
- Tools and techniques for remote working?
- How did distributed development work in practice?
- Types of issues faced by Capgemini managers? By developers?
- Primary drivers for the offshore approach?
- Perception of offshore practitioners by onshore staff?
- Perceptions of changes in organisation and approach as a result of offshoring?
- Specific skills issues associated with the programme? Onshore? Offshore?
- Project planning and associated reporting for distributed projects?
- Perceived risks? Actual risks?
- Perception of level of success of offshoring? Onshore practitioner views? Offshore practitioner views? Customer views?