Determinants of transnational learning capability in multinational firms: the mediated effects of country of origin

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Acknowledgements

Abstract

This study proposes a model for understanding transnational learning capability in multinational subsidiaries. Two organisations structures, namely transnational HR structures and the subsidiary's strategic role in the global value chain, are identified as significant in explaining the link between parent country of origin effects and subsidiary practices. Global learning is seen as one of the core competitive capabilities of multinationals (Bartlett and Ghoshal, 1989). Research on factors impacting on this capability at the level of the multinational subsidiary and among European-owned subsidiaries, is limited. Structural equation modelling, is used to examine the interplay between corporate, firm and national variables in determining transnational learning capability in 292 subsidiaries operating in the UK. The proposed mediated effects of country of origin were confirmed, although the salience of the mediators were found to differ between US, European and Japanese companies, as well as among European companies. The paper contributes to debates on the multi-level factors influencing the diffusion of HR practices in multinational firms.

Introduction

How multinationals (MNCs) organise to develop their learning capabilities within a global context remains a central question for international management and human resource academics. Global learning is identified as one of the key strategic goals characterising transnational companies (Bartlett and Ghoshal, 1989). Research on learning across borders in MNCs has examined the nature of knowledge and the motivational disposition and absorptive capacity affecting knowledge flows (Gupta and Govindarajan, 2000). Others have looked at learning in terms of knowledge transfer: Zhao, Anand and Mitchell (2005) examined inter-organisational knowledge transfer; Lam's (2003) work on intra-organisational knowledge transfer; or knowledge transfer during technological innovation (Miller, Fern and Cardinal, 2007). Less attention has been given to learning capability within firms and the internal human resource (HR) structural and strategic characteristics of a firm that are likely to influence this. In addition, there is a dearth of material examining differences among European companies. The national business systems literature suggests that country of origin is a significant factor affecting organisational forms and processes (Morgan, 2001; Whitley, 1999), yet is often under conceptualised in the organisational learning and international management literature. This paper aims to address these gaps by looking specifically at transnational learning capability in French, German, Nordic, UK and other European firms compared with Japanese and US firms operating in the UK. It is posited that country of origin effects on transnational learning capability are mediated through specific internal organisational structures which provide a supportive learning context, and through subsidiary business capabilities such as functional expertise which affect the demand for transnational learning at the subsidiary level.

The paper makes a number of contributions. First it provides an empirical test of conceptual relationships between learning capability and subsidiary (firm) and organisational (multinational company) level factors. Second, it brings together literatures from business systems theory, international management and international human resource management in an attempt to explicate the conditions under which firm and organisational,

business and HR factors exert influence on organisational behaviour. Third, it extends the international strategic management literature in terms of the role and influence of the HR environment and country of origin on local practice. Fourth, it tests the extent to which explanatory variables are consistent among a sample of European firms.

Learning capability in the multinational context

Learning has become recognised as part of everyday life in organisations. However, it is an area that is typified by its diversity and is theoretically fragmented (Shipton, 2006). Since the early work of Cyert and March (1963) on organisational learning, it has become an area of inquiry for researchers operating in a range of disciplines such as strategic management (e.g. Prahalad and Hamel, 1994), organisational theory (e.g. March 1991; Huber 1991), and international management (e.g. Gupta and Govindarjan, 2000). This paper draws on the theoretical developments from the learning theorists, but applies these in the context of globalisation debates around knowledge co-ordination and exploitation in multinational structures.

Learning capability can be defined in broad terms as formal and informal processes and structures that are aimed at acquiring, sharing and using knowledge or skills within a firm (DiBella, Nevis and Gould, 1996). Learning capability is implicit in much of the organisational learning literature and identified as one of a number of factors affecting organisational learning. While there is no consensus on how to operationalise this concept, its multifaceted nature is acknowledged (DiBella, Nevis and Gould, 1996; Prieto and Revilla, 2005). We argue that one facet of a firm's learning capability is the set of organisational systems and structures put in place for managing the renewal and flow of knowledge. The renewal of organisational knowledge is seen as a critical strategic competence for firms (Nonaka, 1994). It is argued that attending to the flow of the knowledge stock within an organisation aids renewal as it is essential for the exploration of knowledge (i.e. the creation of new knowledge and its assimilation within the organisation) and the exploitation of knowledge (i.e. the capture and application of existing knowledge) (March, 1991; Crossan et al 1999).

Intra-organisational knowledge transfer is an explicit feature network or heterarchy based perspectives on international strategy (Hedlund, 1986; Bartlett and Ghoshal, 1989). In parallel there has been a shift in the strategic role of subsidiaries within multinationals with an expansion by some into more upstream activities within the global value chain (e.g. R&D, strategic marketing, support activities) (Cantwell, 1995; Birkinshaw and Morrison, 1995). As a result it is argued that knowledge based competences are much more geographically dispersed than previously, creating ever greater challenges and demands on multinationals to put in place processes for managing their knowledge assets. These processes we argue are one dimension of the transnational learning capability of a subsidiary.

From the resource-dependency perspective knowledge is seen as a resource and a source of power (Pfeffer and Salancik, 1978). This creates tensions around the sharing and diffusion of knowledge and suggests knowledge can be negotiated (Mudambi and Navarra, 2004). It is therefore in the interests of certain types of subsidiaries to engage in processes that enable knowledge resources to be shared, diffused, retained and/or negotiated. Organisations need to create a social context or space for the negotiation of resources. For example, Frost and Zhou's (2005) work identifies project work, informal networks, and task forces as key knowledge exchange and negotiation media. These theoretical perspectives, social systems and resource dependencies, and the associated empirical findings are consistent with our conceptualisation and operationalisation of transnational learning capability, which is discussed in following sections.

Defining transnational learning capability

We define transnational learning capability in terms of the mechanisms that multinational firms use specifically for organisational learning purposes and the learning functions associated with these, such as the generation of new knowledge, sharing of best practice, or the development of a shared global culture. In this way we are not attempting to decouple the outcomes of learning from the mechanisms in use. The mechanisms and outcomes are focused only on international level learning issues. For example, we only

examine learning mechanisms that operate across national borders; in addition we only examine learning outcomes that are international in their scope such as the development of global knowledge or the creation of new knowledge or know-how among international groups. In this way we are focusing on one dimension of learning capability that is of particular salience in multinational companies namely that of transnational learning or learning on an international level that, without such mechanisms, would not occur. We also focus only on mechanisms which are used by the management community within the multinational firm. This is a narrow conceptualisation and does not capture the learning that occurs at the employee level. However, the advantage of this precise definition is that we are able to measure and explore an area of practice that is more common within firms and as a consequence may be more formalised.

Influences on transnational learning capability

The literature on multinational companies presents a strong case for the influence of parent level strategy and structure on subsidiary practice. However, the growing body of work looking more closely at the strategic role of individual subsidiaries has illustrated the need for a more nuanced exploration of the interplay between influences exerted horizontally and vertically across multinational organisations. In addition, the empirical advances in business systems research illustrate the potential value of country of origin as an explanatory factor of firm behaviour. Therefore, in this paper we explore the impact of firm, corporate and national level influences on transnational learning capability.

Firm sources of influences

Value-added subsidiaries: functional expertise

The 1990s reflected a sea change in the analysis of MNCs with recognition of the need to understand the specific role of subsidiaries within complex multinational structures. This gave rise to a number of typologies of subsidiary strategic role (see Birkinshaw and Morrison, 1995 for a review) which defined

differentiated roles and associated variation in parent-subsidiary control and co-ordination. For example, Birkinshaw and Morrison's typology identifies 'local implementers' which perform most of the activities in the value chain, operate relatively autonomously from the parent and are focused on adapting products to local markets, consistent with multidomestic markets; 'specialised contributors' which perform specialised functions in the value chain, although their geographic scope may be global, and as a consequence are highly integrated with the activities of other subsidiaries; 'world mandates' which are co-developers of their strategy with headquarters, have regional or worldwide responsibilities for business across the multinational. In addition, the work by Frost, Birkinshaw and Ensign (2002), Holm and Pederson (2000) identified subsidiaries that undertook a Centre of Excellence role which they defined in terms of organisational units with capabilities recognised as valuable by the MNC and which were intentionally exploited and/or shared with other parts of the company. Thus from this body of work it becomes apparent that subsidiaries with responsibilities for the development of capabilities with global scope are likely to be well placed to develop learning capabilities which support or facilitate the exploitation and dissemination of these capabilities. The use of project groups that capture experts from different fields or locations, or the use of groups independent of a project have been found to form an essential role in capability development (Un and Cuervo-Cazurra, 2004). The decentralisation of functional expertise evident in manufacturing, or R&D to sites abroad tends to drive multinationals to establish cross-national mechanisms of coordination including for example, international committees, personnel exchanges and intra-organisational projects (Mendez, 2003; Gupta and Govindarajan, 2000). The presence of these mechanisms at the subsidiary level has been found to be significantly associated with the outflow of knowledge to other subsidiaries and the parent (Gupta and Govindarajan, 2000). In sum, the need to develop strategic capabilities in subsidiaries with functional expertise of value on a worldwide scale provides the conditions which are more likely to encourage the development of transnational learning capability. We therefore propose:

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Hypothesis 1: The designation of a subsidiary as a site of R&D functional expertise for the worldwide company will impact positively on transnational learning capability in the MNC firm.

Inter-organisational networks

The existence of inter-organisational networks has been found to be a key route through which multinationals acquire new knowledge resources or gain access to capital or markets (Hamel, 1991). They also provide a route through which ideas and knowledge can be tested among external actors who are recognised as experts or leading authorities and in so doing the subsidiary can accrue legitimacy for their own ideas and knowledge through association (Subramaniam and Youndt, 2005). Network structures involving joint ventures or strategic alliances place significant demands on knowledge transfer between the partners and across the wider organisation if this knowledge is to be capitalised upon, and as such we might expect the existence of joint venture networks to be associated with greater transnational learning capability.

In R&D contexts inter-organisational networks are seen as critical to leveraging local knowledge and the recognition of local innovation systems has further encouraged the globalisation of R&D (Gerybadze and Reger, 1999). For example, Pearce and Papanasatassiou (1999) identified three different forms of R&D laboratories: support laboratories, locally integrated laboratories and international interdependent laboratories. The latter had a remit to develop R&D capability that would underpin the technological capabilities of the worldwide company. As such they found these types of R&D sites to be the predominant form established in the UK due to the supply of scientists and the technology and research infrastructure. Partnerships and subcontracting relationships with educational institutions and local research firms have been identified as significant capability development resources for overseas owned R&D sites (Lam, 2003; Tregaskis, 2003). Given this we might anticipate that the impact of inter-organisational networks on learning capability is tied with the functional expertise of a subsidiary such that:

Hypothesis 2a: Subsidiaries that have joint venture networks or strategic alliances with firms outside of the multinational are significantly more likely to develop greater transnational learning capability.

Hypothesis 2b: Firms with R&D capability are more likely to adopt inter-organisational networks.

Corporate sources of influences

Transnational HR structures

Transnational HR structures for co-ordination and control are central to theoretical debates on international human resource management. A number of models have been proposed that reflect attempts to identify the sources of influence arising in response to endogenous and exogenous strategic imperatives (Beechler, Bird and Raghuram, 1999; Taylor, Beechler and Napier, 1996). Recognised weaknesses in this earlier literature include the under-specification of the role of local context and the conditions under which different international HR structures pervade, and a focus on a limited set of occupational groups e.g. managers or expatriates. More recently debates have focused on motivations for global integration (Almond and Ferner, 2006; Taylor, 2006). The development of HR network structures in building HR capabilities is one area of significance in this respect (Sumelius, Björkman and Smale, forthcoming; Taylor, 2006; Tregaskis, Glover and Ferner, 2005). Taylor (2006) suggests that the HR function has an important role to play through the design of HR systems and policies that support social capital development. Social capital is argued as critical in the coordination and control of resources in MNCs and enhancing the pace of learning (Inkpen and Tsang, 2005). Social structures such as formal networks, tasks forces or committees, and personnel exchanges provide a relational context that can facilitate social capital (Nahapiet and Ghoshal, 1998). It could therefore be argued that the multinational that creates international HR network structures to co-ordinate and control its human resource capability and to speed up learning across the multinational is more likely to have in place transnational learning capability at the level of the subsidiary. Therefore we hypothesise:

Hypothesis 3: The presence of formal international HR networks, designed to bring together HR managers from across the worldwide company, will positively impact on transnational learning capability in the MNC firm.

A second organising mechanism is global policy which potentially acts as a means of integrating and diffusing the firm's HR capabilities in areas such as training and development, expatriate management, succession planning, performance management, organisational learning and so forth. We might therefore expect that if multinationals consider organisational learning to be a strategic capability then there would be a positive correlation between the presence of a formal global organisational learning policy and learning capability at the firm level. Subsidiary knowledge can act as a power resource and there is evidence that subsidiaries will develop knowledge as a subsidiary-level competitive resource, which in turn has negative consequences for its transfer and the development of multinational competitive competences (Mudambi and Navarra, 2004). The establishment of worldwide policy on organisational learning may be used by multinationals to attempt to circumvent such opportunistic behaviour and control this strategic capability. In addition, we might also anticipate that the effects of organisational learning policy are mediated by international HR structures. As such MNCs that establish international HR network structures to facilitate learning might feasibly be more likely to develop a global organisational learning policy as one means of spreading or fostering learning capability across the worldwide operations. Given these arguments we might expect that:

Hypothesis 4a: The presence of a worldwide policy on organisation learning will positively impact on transnational learning capability.

Hypothesis 4b: The presence of international HR networks is more likely to lead to the adoption of a global policy on organisational learning.

Transnational MNC structure

Models of MNC structure have emphasised the move away from hierarchies towards heterarchies (Hedlund, 1986) and conceptualisations of the transnational firm emphasise network relationships and matrix structures (Bartlett and Ghoshal, 1989). Matrix structures require multinationals to co-ordinate across a range of geographical and product lines simultaneously. It is argued matrix structures are more amenable to the efficient movement of an organisation's knowledge stock and are a necessary pre-requisite to building global learning capability. Leveraging such structures to enable knowledge transfer has however, been found to be problematic in practice (Gupta and Govindarajan, 2000). Brock and Birkinshaw (2004) report matrix structures and the transnational or network model have been difficult for companies to implement in practice due to the complexity that ensues. The use of matrix structures or mixed structures would require mechanisms to capture and diffuse subsidiary level knowledge in order for the multinational to learn from its subsidiaries and to diffuse knowledge between subsidiaries and the parent and subsidiary. Therefore, we might expect that subsidiaries that are nested within an organisational matrix are more likely to have developed transnational learning capabilities:

> *Hypothesis 5a:* International matrix structures will impact positively on transnational learning capability.
>
> *Hypothesis 5b***:** Firms governed by matrix structures are more likely to adopt international HR network structures
>
> *Hypothesis 5c:* Firms governed by matrix structures are more likely to adopt a global organisational learning policy.

National sources of influence: mediated effects of country of origin

Business systems research suggests that home institutions play a critical part in determining the behaviour and structures of multinational organisations (Almond and Ferner, 2007). From the comparative institutional literature it is posited that interactions between groups of actors (i.e. individuals,

organisations, governments), shape institutions which define national paths of development (Hall and Soskice, 2001; Morgan, 2001; Whitley, 2001). National institutions explored in the literature are wide ranging including training and skills systems; governance systems; employment relations systems; innovation or production systems. One of the key concepts tied to this literature is the embeddedness of the firm within the home national business system. Almond and Ferner (2006: 12) argue that when MNCs go abroad the practices they transfer, are influenced by 'competencies, cognitive frameworks, and modes of operating developed in their parent business system'. As a result MNCs may be more or less likely to adopt organising structures that support or resist the subsidiary's ability to organise in ways consistent with the host institutional context. If it is the case that MNC structures or ways of organising forged in the home country institutional space influence subsidiary practice then it is important to consider which organisational level structures are important and act to mediate the effects of country of origin.

In the area of organisational learning the research evidence is limited. One notable exception is the work of Lam (2003). In case study research of US and Japanese R&D subsidiaries in the UK, Lam demonstrated how the home institutions of overseas subsidiaries can constrain the ways in which these firms are able to organise and co-ordinate knowledge resources in a host environment. Specifically she found country of origin effects on the co-ordination of knowledge and the creation of what she referred to as the 'transnational learning space' in multinationals. Lam argued that the more liberal institutional systems of the US and Europe in comparison with Japan impacts on the role of overseas R&D sites and the human resource strategies associated with local labour markets. For example US companies have been found to favour professional-orientated career structures, external orientated recruitment strategies and as such there is a greater openness to accessing knowledge resources through local labour markets (Westney, 1993). This flexibility in how local labour resources are used facilitates the development of internal global communities and human resource systems that are supportive of international professional networks (Lam, 2003).

By contrast, Japanese companies, she argued, develop their learning and innovation capabilities in a different way. Knowledge creation and diffusion is more firm-specific, and group or process embedded. This is often consistent with an innovation strategy based on incremental development and as such there is less of a business case for transnational networks engaged in more general knowledge creation or diffusion. It is also argued that the Japanese style of knowledge creation generates specific knowledge diffusion issues in that there is less of a tendency to codify this knowledge prior to transfer making it less amenable to transfer through certain mechanisms (Edwards and Ferner, 2004). This in part explains the reliance on personnel transfers for knowledge diffusion in Japanese firms.

Research evidence on learning practices and processes among European owned multinationals has been less extensive, although there is a growing body which has examined issues of knowledge diffusion and forms of control among these companies. For example, Ferner, Quintanilla and Varul (2001) in their examination of German multinationals identified a strong preference for bureaucratic mechanisms of control over their subsidiaries, although there was some evidence that these were supported by personal and informal controls. Ferner and Varul (1999) also found a shift away from hierarchical forms of control traditionally dominant in German multinationals and a move toward the use of network structures in some instances (Ferner and Varul, 1999).

The business capabilities of the firm have also been linked with country of origin effects. Lam's case study evidence suggests that learning capability is not only a function of the nature of R&D, but that R&D roles are influenced by home institutions. Specifically, Japanese companies are more likely to adopt a 'hub' model (Gassman and von Zedwitz, 1999: 235) of R&D where R&D is dispersed geographically but with the home centre having strong control over overseas operations which in turn perform a support role. This approach fits with the dominant co-ordination model embedded in the national innovation system whereby resources are tightly controlled to maximise integration, and internationalisation is realised through extending and building upon existing home knowledge resources. In contrast US MNCs tend to adopt an integrated R&D network whereby R&D is more decentralised and centres

of excellence may be located in a number of host countries. This model fits national innovation systems which emphasise radical innovation as opposed to incremental innovation and therefore US MNCs will look to exploit external resources in scientifically rich locations such as the UK (Pearce and Papanasatassiou, 1999). Lam argued that the ability of Japanese companies to create transnational learning capability may be more limited than that of US and European companies as a result of the heritage of the national innovation systems in these countries.

While differences between European firms, US and Japanese firms have been developed from the literature, few studies have been able to test these through case research and even less through survey work. Furthermore, few studies have the possibility to explore practices in subsidiaries of home owned organisations alongside those in foreign owned organisations. In this study we do just this. In comparative institutional terms the UK is, as identified above, often seen as more liberal than many European business systems. In the area of knowledge creation or skill creation many parallels between the UK and the US have been drawn (Hall and Soskice, 2001). The career systems are professional in focus with individuals having the predominant responsibility for their skill development and an under-emphasis on formal skill acquisition through qualification has found firms using internal learning opportunities as a means of attracting and retaining employees. This provides an environment whereby home owned firms may find it relatively easy to encourage international learning mechanisms. So as with European and US firms we might anticipate learning capability to be greater among UK firms when compared to Japanese firms.

Thus we argue that learning capability is bound up with aspects of HR structures and competence which are in turn influenced by the institutions of the home country. Therefore in attempting to understand the learning capability of foreign and home owned firms, operating in the UK, country of origin factors are likely to be important and that their effects are mediated through organisational structure and business factors.

We therefore propose:

Hypothesis 6a: Learning capability will be greater among US, European and UK owned firms than their Japanese counterparts, due to the presence of HR networks.

Hypothesis 6b: Learning capability will be greater among US, European and UK owned firms than their Japanese counterparts, due to the presence of global organisational learning policy.

Hypothesis 6c: Learning capability will be greater among US, European and UK owned firms than their Japanese counterparts, due to the presence of R&D expertise.

INSERT FIGURE 1 – HYPTOHESISED MODEL

Method

Survey details

The survey data are the result of a multi-stage project which involved the construction of a sampling frame of home and foreign owned multinationals operating in the UK, a pilot and screening stage and finally the launch of a face-to-face CAPI (Computer Assisted Personal Interview) administered questionnaire. The gaps and biases in off-the-shelf databases (c.f. Collinson and Rugman, 2005; McDonnell et al 2007) particularly those that up until now have been used to examine employment issues in multinational companies operating in the UK (for a review see Edwards, T., Tregaskis, Edwards, P,. Ferner and Marginson 2007) led the research team to invest significant resources in constructing a robust listing of the target MNC population of interest. The size thresholds set for foreign owned subsidiaries were: foreign firms that employed at least 500 employees worldwide and at least 100 in the UK. For home owned firms the size threshold was at least 500 worldwide and at least 100 of these outside the UK.

The database listing drew primarily on information provided by AMADEUS and FAME and was updated and supplemented with other web (case by case company searches), and professional data sources (Dun and Bradstreet listings, Personnel Managers Yearbook, Acquisitions Monthly, and the UK Trade and Industry database) prior to fieldwork (full details of the steps taken to verify data, check for duplication of subsidiaries and update data are given in Edwards, T., Tregaskis, Edwards, Marginson and Ferner, 2007). A total of 3099 companies were identified as part of the potential sample frame. A telephone administered questionnaire, using CATI (computer assisted telephone interview) was employed to verify the organisational details held on the our database for these 3099 companies, pilot a number of key questions and ascertain interest in company participation in the main study. As a result of this process 951 companies were excluded as they fell below the size thresholds, were duplicate companies or no longer existed. Of the potentially eligible companies contacted, 761 refused to participate and in 456 cases contact was made with the company on numerous occasions but not with the

respondent. A total of 931 (43% response rate) companies agreed to participate in the screener stage, of which 302 (33% response rate) agreed to be take part in the main study. The survey data were collected during a 6-month period from late 2005 to early 2006. For analysis, with listwise deletion, 292 cases were available for analysis.

Variables

Transnational learning capability. Ten questions were used as indicators of four distinct aspects of transnational learning capability, which when combined provided a general measure of transnational learning capability. Confirmatory factor analysis using EQS was used to test this second order 5 factor structure. The questions were developed from a combination of the literature, and previous case study research (Tregaskis, Glover and Ferner 2005). The four distinct dimensions measured were as follows: factor1 measured the international management learning mechanisms adopted in firms. Respondents were asked to indicate if they used any of the following 4 mechanisms specifically for organisational learning purposes: expatriate assignments, international project groups or task forces, international formal committees and international informal networks. Responses were dummy coded 1 as yes and 0 as no. To examine the learning outcomes associated with these respondents were asked to think about their most important organisational learning mechanism and rate the importance of three types of learning outcomes on a 5-point scale from 1 not at all important to 5 very important. This provided a measure of: factor 2, learning through international policy with two items where respondents were asked to rate the importance of international policy adaptation and international policy development as learning outcomes; factor 3, diffusion of learning with 2 items, where respondents were asked to rate the importance of dissemination of best practice internationally and the generation of new knowledge or know how as learning outcomes; factor 4, diffusion of a global mindset with two items where respondents where asked to rate the importance of the development of core global organisational competencies and a global organisational culture as learning outcomes.

As the factor model used dichotomous items the robust statistics were used in line with the simulation results from Mathen and Satorra (1995) and Kupek (2005) indicating this as an appropriate means of handling data of this nature. The proposed second order 5 factor model was tested and compared to a single factor solution (results in Table 1). EQS provides a number of statistics for evaluating the goodness of fit of a model. The non-significant satorra-bentler scaled χ^2, and the lower values of the Akaike's information criterion (AIC) and Bozdogan's variant on AIC (CAIC) all support the second order model as providing the better fit. Superior fit is also supported by the higher values on the normed fit index (NFI), the non-normed fit index (NNFI) and the comparative fit index. The items all load significantly on each of the four primary factors specified at the .0001 level with factor loading ranging from 6.52 to 35.46. The four primary factors load significantly on the second order factor at the .0001 level with factor loadings ranging from 10.71 to 11.10. The results therefore confirm that the second order 5 factor model is superior to the single factor solution. This means that there is a general factor representing transnational learning capability which is predicted by four distinct first order factors. Subsequent analysis will enable the impact of the independent variables on the general measure of transnational learning capability to be explored alongside the impact on each of the distinct 4 factors. The reliability of the general measure of transnational learning capability was α .91. The reliability for the distinct factors was: factor 1 α .68 (mean 0.68, SD 0.32, range 0-1), factor 2 α .90 (mean 3.55, SD 1.34, range 1-5), factor 3 α .90 (mean 3.22, SD 1.35), and factor 4 α .84 (mean 2.91, SD 1.25, range 1-5).

Insert table 1 here

Country of origin: firms were asked to indicate the country in which the Ultimate Controlling Company was located. As the aim was to identify the country of origin of the worldwide company, interviewers prompted to ensure the 'operational headquarters' were identified as opposed to the country of a registered office. The subsidiaries were subsequently grouped on the basis of

their country of origin into dummy variables representing Japanese (n=21), US (n=119), UK (n=41), French (N=23), German (n=17), Nordic (n=20), Rest of European (n=32) and the Rest of the World (n=19) firms. The reference category was Japan.

Subsidiary role in the value chain: The functional expertise of the subsidiary was assessed by asking respondents to indicate on a five point scale (1=strongly disagree to 5=strongly agree) the extent to which they agreed that significant expertise in R&D within the worldwide company was generated by the subsidiary (mean 2.84, sd 1.30).

Transnational Multinational Structure: To measure the extent to which the subsidiary was part of an international matrix respondents were asked to indicate which of the following levels or divisions of business organisation existed in the worldwide company: 1) international product, service or brand based divisions, 2) regions (e.g. Europe of Asia-Pacific), 3) global business functions (e.g. manufacturing, R&D, sales). The scores on these questions were summed giving a measure of the degree of international matrix organisation, whereby 0 indicated there was no international organising structure (n=16), 1 indicated there was only one primary international organising structure (n=57), indicated there were two primary international organising structures (n=79) and 3 indicated there were three international organising structures (n=140).

Inter-organisational networks: To measure network relationships respondents were asked if the firm was currently engaged in any joint ventures, strategic alliances or similar formal links with outside companies. Responses were dummy coded with 1 indicating the presence of networks (n=131), 0 absence of networks (n=161)

Transnational HR networks: The existence of transnational HR groups was assessed by asking if HR managers from different countries were brought together in a systematic way such as in task forces. Responses were coded

as 1 indicating yes HR managers were brought together on a regional or global basis (n=182) and 0 indicating they were not brought together (n=110).

Global organisational learning policy: To establish if organisational learning was formalised subsidiaries were asked if there was a formal policy on organisational learning within the worldwide company, with 1 indicating the presence of a policy (n=103) and 0 indicating no policy (n=189).

Control variables: Two factors were controlled for. First, as firms may have greater capacity to innovate and learn because they have greater resources, the size of the subsidiary was controlled for (Collins and Smith, 2006). The size of the firm in terms of number of UK employees was recorded as continuous data and the logarithmic transformation used (Log mean 2.88, sd 0.55, range 2-4.7). Second, because the demand for integration and the sharing of learning may be greater among manufacturing operations, industrial sector was controlled for by using dummy variables for manufacturing (n=148), services (n=124) and other/non-production (n=20). The reference category was services. Correlations between all the variables used in the analysis is available on request.

Analysis

To test the hypotheses covariance structure analysis was used with robust methods as the model included dichotomous variables (Mathen and Satorra, 1995; Kupek, 2005). The analysis was conducted using EQS.

A model comparison test commonly adopted in causal analysis was used to examine the hypothesised mediated impact of firm country of origin on learning. Specifically this allowed the indirect country effects model hypothesised (figure 1) to be compared to a full model where a direct effects country model was also specified. The full model proposes that learning is directly influenced by firm country of origin, as well as HR structure and policy, and R&D functional expertise of the firm. The indirect country effect model proposed that the effects of firm country of origin on learning are mediated by

HR structure and policy, and R&D functional expertise of the firm. To test if country of origin has a significant direct impact on learning but that HR structure and policy, and R&D functional expertise of the firm not, a third model was specified.

Results

The hypotheses specified relationships between firm, corporate and national variables on transnational learning capability in multinational firms. The results below will demonstrate the extent to which these paths adequately predict transnational learning capability. The hypotheses also specified mediated effects for country of origin.

Table 2 presents the results for the three structural models tested. In each case, the NFI, NNFI and CFI indicate good fit to the data. However, the highest values of the NFI, NNFI and CFI are for the full and indirect effects models, indicating better fit. No significant difference between the full model and the indirect model, plus equivalent values of the NFI, NNFI and CFI indicate the indirect effects model has equivalent fit to the full model. Lower AIC and CAIC statistics suggest the indirect model is a better fit to the data. With fewer paths, it is the more parsimonious solution. The direct effects model significantly differs to the baseline model and provides a poorer fit to the data. This indicates that HR structure, policy and R&D functional expertise are important factors mediating the impact of the of country of origin.

Insert table 2 here

Figure 2 shows the significant paths for the indirect effects model, full results are listed in table A1 in the appendix. The result in figure 2 shows that transnational learning capability is, as predicted, positively associated with the presence of HR networks (H3), the presence of an organisational learning policy (H4a), R&D capability within the subsidiary (H1), the presence of inter-organisational HR networks (H4b) and international matrix structures (H5). The results also confirm the following direct effects between: having R&D capability within the subsidiary leads to greater inter-organisational networks

(H2b); the presence of transnational HR networks (H4b) and international matrix structures (H5c) leads to the adoption of a global organisational learning policy; but the hypothesised direct relationship between the presence of matrix structure and the adoption of international HR networks was not confirmed (H5b).

INSERT FIGURE 2 HERE

In table 3 the indirect effects of country on transnational learning capability are presented. These figures demonstrate that with Japan as the reference group, transnational learning capability is significantly greater among US firms, followed by firms from the Rest of the World, Nordic firms, French firms, Rest of Europe and finally the UK. There is no significant difference between transnational learning capability for German and Japanese firms and the absence of a significant mediation effect suggests that low learning capability among German and Japanese firms is linked to the lower presence of HR structures and R&D expertise. In other words transnational learning capability is low in German and Japanese firms due, in part, to the absence of other organisational enabling capabilities. The non-significant results for the UK in figure 2, but significant indirect effects in table three for UK firms indicate the effect of UK ownership might be cumulative over several variables. For other country of origin effects significant results in figure 2 and table 3 indicate mediation mainly through specific variables. Namely, for European owned firms the effects on learning appear to be mediated primarily through HR network structures. For US owned companies mediation is primarily through all three variables i.e. HR network structures, global organisational learning policy and R&D expertise. The results therefore offer partial support for H6, in particular they confirm the importance of mediated country of origin effects, but also illustrate that learning capability in US and European firms, and among European firms, is explained by different organisation structures and firm capabilities. This would reinforce the need to disaggregate data from European companies where possible.

Insert table 3 here

From table 4 the differences between the countries in terms of the four components of transnational learning capability can be identified. In terms of the extent of management learning mechanisms (factor 1) adopted by firms, it is clear that Japan and Germany have the least with the most extensive use of management learning mechanisms being in US companies. Factor 2 illustrates the extent to which management learning mechanisms are used for the development or adaptation of policy and here again Japanese and Germany firm tend to do this least and the US the most. In terms of the diffusion of learning Nordic and US companies come out strong, but all countries tend to engage in this activity to a significantly greater extent than German or Japanese companies. A similar pattern is found with respect to activity aimed at developing a global mindset. In sum, looking at each component of transnational learning capability, German and Japanese firms demonstrate lower capabilities in all areas compared to other European companies and US companies tend to lead the field in all areas.

Insert table 4 here

Discussion

The purpose of the paper was to identify the predictors of firm level transnational learning capability. The results supported the predicted mediated effect of country of origin on transnational learning capability and also demonstrated that the mediators differed for US companies, compared to European firms and within European firms. Specifically the effect of American ownership on transnational learning capability was mediated through the presence of international HR networks, global organisational learning policy and R&D capabilities. In contrast the important mediator in French and Nordic and other European companies was the presence of international HR networks. German companies were more similar to Japanese firms in that transnational learning capability was low due largely to the absence of supporting HR structures or R&D capability. In the case of home (UK) owned firms the mediation was cumulative across all three measures. US companies

demonstrated the greatest transnational learning capability with all three mediators operating as significant explanatory factors.

The results show that learning capability is closely aligned to the subsidiary's global competence development and its role in the global value chain. This would reinforce subsidiary role theory arguments that some subsidiaries are more central strategic players and as such have the autonomy to shape their relationships with other subsidiaries within the mnc network. Transnational learning capability would appear to be an important outcome in this regard.

International matrix structure was associated with greater transnational learning capability. This result indicates that subsidiaries that are exposed to multiple organising structures such as international, regional and/or global structures tend to adopt transnational mechanisms for learning purposes. The effect of matrix structure was also mediated through organisational learning policy, although not through HR network structure. We might conclude that multinationals using matrix structures are more likely to use global policies as a means of directing subsidiary level practice. By contrast international HR structures were not determined by the presence of matrix organising structures.

Inter-organisational networks was found to be a significant predictor of transnational learning capability, supporting the argument that subsidiaries engaged in acquiring knowledge or know-how from international joint ventures or strategic alliances also play an important role in diffusing knowledge to other parts of the multinational organisation. The results here indicate that the existence of subsidiary level inter-organisational networks was a consequence of the subsidiary's strategic role in the multinational, specifically their role as a global R&D innovator.

Subsidiaries that were governed by a global organisational learning policy and transnational HR policy groups demonstrated greater transnational learning capability. There is recognition within the international HR literature that standardisation at the cost of local sensitivity is often not an achievable nor desirable objective. However, integration through the promotion of common organising frameworks, shared assumptions and values is seen as a viable alternative because they enhance the international social capital in

multinationals (Taylor, 2006). Social capital provides organisations with a supportive environment conducive to learning through social exchange and relational networks (Nahapiet and Ghoshal, 1998). As such it may be that the transnational HR structures evidenced in this study provide a supportive learning context because they enable international social capital, making it easier for organisations to establish mechanisms that capture and diffuse knowledge across national borders.

The effects of country of origin were mediated through organisational structures. The Japanese firms had, as predicted, the lowest level of transnational learning capability, which would support case study evidence suggesting that transnational learning mechanisms are more difficult for Japanese companies to support. The variation in the relative importance of the different mediators within the European firms suggests institutional forces remain a key factor in how multinationals organise their activities. German firms deviated significantly from other European firms in that they had a much lower level of learning capability and lacked, to the same degree, the transnational HR structures present in other firms. As such there was no significant difference between the German and Japanese firms in this regard. This result might suggest that German firms operating in the UK are seen less as innovators or repositories of value-adding knowledge. Such value-adding activities may remain within the home country, with the subsidiaries overseas feeding local markets. Case evidence from Ferner and Varul (2000) found the UK subsidiaries of German firms acted as 'vanguard' subsidiaries providing the parent with access to innovative practices in areas of international HRM as German companies attempted to internationalise. Therefore our finding appears contradictory. However, one explanation may be that the case evidence found that the mechanisms for diffusion centred around informal information flows, rather than via proactive and formal organisational learning mechanisms. As such our results are complementary and the survey evidence extends our empirical understanding of the nature of organisational structures in German MNCs.

The presence of international HR networks was found to be a key determinant of transnational learning capability among the other European and US firms. However, it was only in the case of US firms that the presence

of R&D capabilities and global organisational learning policy were key mediators. Recent extensive case study research, involving 281 interviews at multiple levels in 18 US companies operating in Germany, Ireland, Spain and the UK revealed considerable insights into the structures and processes adopted within these organisations (Almond and Ferner, 2006). The evidence here would provide further support to the case study finding that US MNCs tend to exert strong control over their overseas operations, due to the heritage of the national business system which reinforced this mode of organisation as optimal. In the area of organisational learning, policy and international HR structures appear to be key planks of this control. The results for the home owned firms suggest that while organisational contingencies are significant mediators of British ownership on transnational learning capability in British operations, the impact tends to be less strong than for foreign owned subsidiaries.

More work is needed to establish whether the relationships examined here hold across different host country contexts. Case study work by Tempel , Edwards, Ferner, Muller-Camen and Wächter (2006) illustrated the importance of interdependencies between the subsidiary and local institutions, and parent and subsidiary in explaining the extent of compliance with parent mandates by US subsidiaries in Germany and Britain. Research by Gooderham, Nordhaug and Ringdal (2006) found US MNCs were constrained in their ability to transfer calculative HRM practices to subsidiaries in Germany and Denmark/Norway when compared to the UK, Ireland and Australia. In the context of this paper questions arise regarding which factors hold as mediators of country of origin effects and to what extent transnational HR structures have the same impact on transnational learning capability in different host country environments?

This study has attempted to contribute to the literature on organisational learning through its operationalisation of one aspect of learning capability. There are many ways in which a firm's learning capability could be explored, and in examining management processes we were unable to tap into learning capability achieved through other employee groups. However, our use of the survey method and our efforts on maintaining representativeness and the reliability and validity of our data enable us to

draw generalisable insights into our understanding of learning practice among multinational firms operating in the UK and the impact of firm, organisational and country of origin effects. The evidence suggests that country of origin affects the role of subsidiaries in the global value chain and the presence of certain forms of international HR structures that support local transnational learning capabilities.

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Table 1: Goodness of Fit Statistics for transnational learning capability items

Model	χ^2	Df	p	AIC	CAIC	NFI	NNFI	CFI
2nd order model	36.35	31	>.20	-25.65	-170.85	.98	.996	.997
1 factor model	116.87	35	<.001	46.87	-117.06	.96	.967	.975

Table 2: Goodness of Fit Statistics for the structural model

Model	Model χ^2	Df	p	Model $\Delta\chi^2$	P	AIC	CAIC	NFI	NNFI	CFI
Base line model: Full model with direct country effects	265.39	190	<.001	---	---	-114.63	-1003.19	.92	.96	.97
Indirect country effects model	278.93	197	<.001	13.54	>.05	-115.06	-1036.39	.92	.96	.97
Direct effects only model	303.14	193	<.001	37.75	<.001	-82.85	-985.47	.90	.94	.96

Notes: χ^2 = model chi-square, $\Delta\chi^2$ = change in model chi-square

Table 3: Indirect effects for country for best fitting model

	Indirect effects
C-of-O: France	.066*
C-of-O: Germany	.045
C-of-O: Nordic	.071*
C-of-O|: Rest of Europe	.051*
C-of-O: UK	.046*
C-of-O: US	.090***
C-of-O: Rest of World	.083**

Notes: *** significant at p <.001 (1-tailed), ** significant at p <.05 (1-tailed), * significant at p < .01 (1-tailed)

Table 4: Indirect effects for country for best fitting model on the first order factors

	Indirect effects
Factor 1: Management learning mechanism	
C-of-O: France	.066*
C-of-O: Germany	.045
C-of-O: Nordic	.071*
C-of-O|: Europe	.051*
C-of-O: UK	.046*
C-of-O: US	.090***
C-of-O: Rest of World	.083**
Factor 2: International policy learning	
C-of-O: France	.277*
C-of-O: Germany	.190
C-of-O: Nordic	.298*
C-of-O|: Europe	.212*
C-of-O: UK	.193*
C-of-O: US	.376***
C-of-O: Rest of World	.350**
Factor 3: Diffusion of learning	
C-of-O: France	.338*
C-of-O: Germany	.231
C-of-O: Nordic	.340**
C-of-O|: Europe	.258*
C-of-O: UK	.235*
C-of-O: US	.457**
C-of-O: Rest of World	.425**
Factor 4: Diffusion of global mindset	
C-of-O: France	.317*
C-of-O: Germany	.217
C-of-O: Nordic	.340**
C-of-O|: Europe	.243*
C-of-O: UK	.221*
C-of-O: US	.429***
C-of-O: Rest of World	.399***

Notes: *** significant at $p < .001$ (2-tailed), ** significant at $p < .05$ (2-tailed), * significant at $p < .01$ (2-tailed)

Appendix

Table A1: Path coefficients for indirect model

Path from	Path to	Path coefficient
HR network structure	Transnational learning capability	.117***
Org. learning policy	Transnational learning capability	.098***
R&D expertise	Transnational learning capability	.034***
Size	Transnational learning capability	.018
Matrix	Transnational learning capability	.040**
Intra-organisational networks	Transnational learning capability	.067**
R&D expertise	Intra-organisational networks	.066**
Size	HR network structure	.214****
France	HR networks structure	.344**
Germany	HR networks structure	.246
Nordic	HR networks structure	.516****
Rest of Europe	HR network structure	.291***
UK	HR network structure	.118
US	HR network structure	.382****
Rest of world	HR network structure	.286*
Matrix	HR network structure	.045
HR network structure	Org. learning policy	.120*
France	Org. learning policy	.038
Germany	Org. learning policy	.225
Nordic	Org. learning policy	.064
Rest of Europe	Org. learning policy	.021
UK	Org. learning policy	.081
US	Org. learning policy	.174*
Rest of world	Org. learning policy	.171
Matrix	Org. learning policy	.059*
France	R&D expertise	.477
Germany	R&D expertise	.217
Nordic	R&D expertise	.283
Rest of Europe	R&D expertise	.399
UK	R&D expertise	.599
US	R&D expertise	.617*
Rest of world	R&D expertise	.780*
Manufacturing	R&D expertise	.622****
Other sector	R&D expertise	.469*

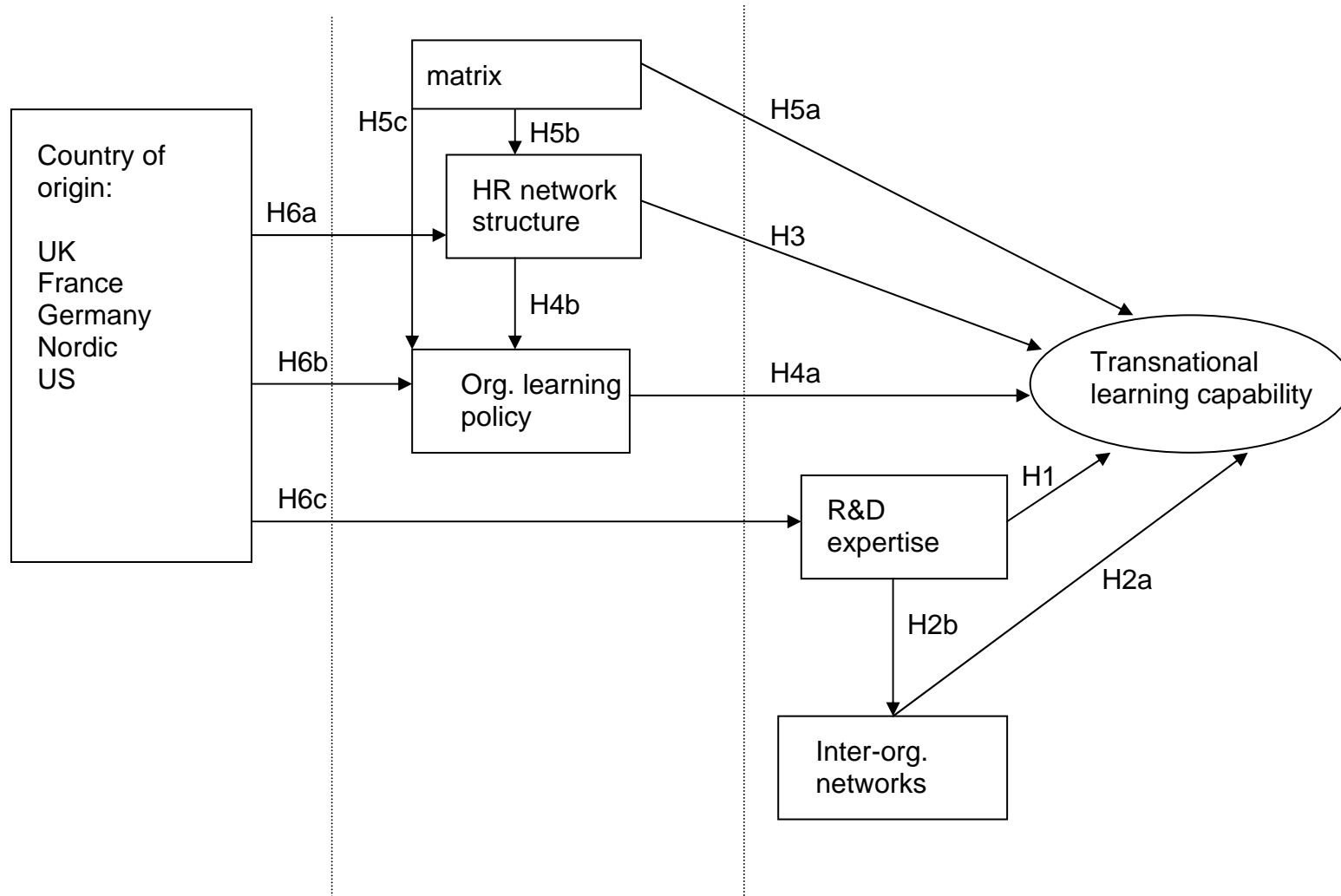Notes: *** significant at p <.001 (1-tailed), ** significant at p <.05 (1-tailed), * significant at p < .01 (1-tailed)

Figure 1: Graphical representation of hypothesised relationships

Figure 1: Graphical representation of hypothesised relationships