Subsidiary importance in the MNC: What role does internal embeddedness play?

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ABSTRACT

This paper addresses the issue of how a subsidiary’s internal and external embeddedness interact in generating the importance of the subsidiary vis-à-vis the MNC as a whole. We take previous findings of the positive impact of external embeddedness on a subsidiary’s importance as our starting point and consider two questions: (a) how does the internal embeddedness of a subsidiary affect its organisational importance, and (b) how do a subsidiary’s internal and external embeddedness interact in generating organisational importance? We test hypotheses reflecting these questions on data from 97 foreign subsidiaries belonging to Swedish multinationals. We find that internal embeddedness is negatively related to a subsidiary’s importance to product development but unrelated to its importance to production development. We also find that internal embeddedness dilutes the positive impact of external embeddedness on a subsidiary’s importance to production development. We discuss the findings in the light of the extant literature and consider implications for future research and MNC managers.

1. Introduction

A significant development in the multinational corporation (MNC) subsidiary literature is the detailed investigation of the role of business networks in subsidiary development and impact in MNCs (Andersson & Forsgren, 2000; Andersson, Forsgren & Holm, 2002; Andersson, Forsgren & Holm, 2007; Forsgren, Holm, & Johanson, 2005; Ghauri, 1992; Holm & Pedersen, 2000). One issue that these studies have investigated relates to the ‘organisational performance’ of the subsidiary within the MNC of which it is a member. By ‘organisational performance’ of a subsidiary, we mean, following Andersson, Forsgren, and Pederson (2001), the impact of the subsidiary on the rest of the MNC through its knowledge development and knowledge sharing activities. One particular manifestation of the ‘impact’ of the subsidiary within the MNC is the importance that other units in the organisation, and particularly the headquarters (HQ), attach to the subsidiary insomuch as it is of use to them as a source of knowledge or capability. Business network studies have shown that subsidiary importance is a robust construct and reflects the subsidiary’s potential to contribute to technological and market development in the MNC (Andersson et al., 2002) and is a key source of its bargaining strength (see, in particular, Andersson et al., 2007). Thus, for example, the basis of a subsidiary’s status as a ‘centre of excellence’ within the MNC is the recognition by HQ that the subsidiary has gained expertise or capability in a particular function or activity of potential value to other units in the organisation (Andersson & Forsgren, 2000).
A subsidiary’s importance to production or product development has been shown to be strongly linked to its ‘embeddedness’ in networks of business relationships between the subsidiary and a (small) number of customers and suppliers. While a subsidiary’s business partners could be either sister affiliates in the MNC or external business organisations, most of the attention has been paid to subsidiaries’ business relations with external business organisations and to the impact of such relationships on the MNCs. With rare exceptions (Garcia-Pont, Canales, & Noboa, 2009; Schmid & Schuring, 2003) internal subsidiary embeddedness has not been the focus of empirical investigation. Most empirical studies have only included measures/indicators of external business embeddedness in their analyses.

However, subsidiaries are clearly simultaneously embedded in both external and internal networks (Forsgren et al., 2005). Even though the degree or ‘depth’ of internal embeddedness may be less than that of the external embeddedness, it is unlikely to be zero (Holm & Pedersen, 2000; Yamin, 2005). An important question in this context is, given that a subsidiary’s external network embeddedness enhances its importance to the MNC’s competence development, does the subsidiary’s internal embeddedness reinforce or dilute this effect?

This paper addresses the issue of how a subsidiary’s internal and external embeddedness interact in generating the technological importance of the subsidiary vis-à-vis the MNC as a whole. We take previous studies’ findings relating to the positive impact of external embeddedness on a subsidiary’s organisational importance as our starting point and ask two research questions: (a) how does the internal embeddedness of a subsidiary affect its organisational importance, and (b) how do a subsidiary’s internal and external embeddedness interact in generating organisational importance? In Section 2 we consider the distinctive features of the internal and external embeddedness of subsidiaries. In Section 3 we develop hypotheses relating to the impact of internal embeddedness on subsidiary importance and also with regard to the interaction between internal and external embeddedness in terms of a subsidiary’s importance. Section 4 explains the methodology and data source utilised in this study and in Section 5 we discuss our findings.

2. Subsidiary embeddedness: features of internal and external exchange relationships

2.1. Subsidiaries’ external and internal embeddedness

Several business and management scholars have employed the concept of embeddedness to stress the crucial role of relationships with other business and institutional actors as a driver of organisational success (Gulati, 1998; McEvily & Zaheer, 1999; Park & Luo, 2001; Peng & Luo, 2000; Uzzi, 1997). The concept has also been employed to analyse the power basis of the subsidiary for gaining importance in the MNC (Andersson et al., 2002, 2007; Forsgren et al., 2005; Garcia-Pont et al., 2009). In the business network literature (e.g. Andersson et al., 2007; Forsgren et al., 2005) subsidiary embeddedness is defined specifically in terms of mutual adaptations in developing production processes and products between a focal subsidiary and a small number of counterparts (mostly customers or suppliers) with whom the subsidiary has developed lasting business relationships. Through the cumulative adaptation process with counterparts, subsidiaries develop technological and organisational competencies which, when transferred to other units, help to improve the overall level and range of competencies within the MNC (Andersson, Forsgren & Holm, 2001).

Although the focus of most researchers has been on subsidiaries’ external embeddedness, there is a good basis in the extant literature for the existence of internal business relationships and hence a degree of internal embeddedness within MNCs (for a detailed discussion of this literature, see Yamin, 2005). From a firm-theoretic perspective, the possibility of market or business relationships within hierarchies has been noted in the transaction cost/internalisation literature (Buckley & Casson, 1998; Coase, 1937). The MNC management literature indicates a significant degree of subsidiary leverage for independent initiative and mandate building and while much of this is developed through business relationships with external partners, the potential for internally focused business relationships is also acknowledged (Birkinshaw, 1996; Birkinshaw & Riddlerstraå, 1999). In particular, there has been much emphasis in the literature on the value of intra-organisational cooperation amongst MNC managerial strata across national and sub-unit boundaries (Bartlett & Ghoshal, 1993; Gnyawali, Singal, & Mu, 2009; Kostova & Roth, 2003; Monteiro, Arvidsson, & Birkinshaw, 2008; Tsai & Ghoshal, 1998; Tsai, 2000). The existence of collaborative ties and relationships between sub-units are shown to drive the process of resource (information, products, personnel and support) exchange and combinations between units (Tsai & Ghoshal, 1998) which can lead to ongoing business exchanges between them. For example, the exchange of personnel between sub-units may help the sub-units to identify mutually profitable business opportunities.

2.2. Distinctive features of internal and external subsidiary embeddedness

Even when inter-subsidiary business relationships are established they may be somewhat different from business relationships with external partners. From the perspective of this paper, a crucial issue is whether internal business relationships have similar consequences for technical and production adaptations as external business relationships and, more generally, whether they have similar competence development effects on the subsidiary. In this section we consider four factors affecting the ‘productivity’ of a business network for the subsidiary. Table 1 lists the factors and their consequences for internal and external networks.
Table 1

<table>
<thead>
<tr>
<th>Factors affecting network formation</th>
<th>Internal business networks</th>
<th>External business networks</th>
<th>Consequences for the subsidiary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial (non-administrative) interdependencies generated via influence of corporate context</td>
<td>Managerial networks High</td>
<td>Market transactions Low</td>
<td>More frequent and ‘deeper’ adaptations in external networks. Internal network likely to have activity focus closer to MNC ‘dominant logic’ than external networks. Investment in internal business networks more constrained by the MNC’s ‘internal capital market’. Internal networks subject to a greater degree of ‘damage of distance’.</td>
</tr>
<tr>
<td>Control by HQ</td>
<td>High</td>
<td>Low/medium</td>
<td></td>
</tr>
<tr>
<td>Location and geography</td>
<td>More likely to be cross-border</td>
<td>More likely to be in host country</td>
<td></td>
</tr>
</tbody>
</table>

2.2.1. The formation processes of internal and external business networks

The internal and external business relationships of a subsidiary typically have different origins. External relationships should be viewed from the perspective of ‘markets as networks’ (McLoughlin & Horan, 2002). Here the starting point is the ‘ordinary’ business transaction between a buyer and a seller (a market transaction phenomenon) and its evolution, via increasing interdependence, into a business relationship (the building block of the business network phenomenon). Thus the business comes first and the relationship afterwards. Internal business relationships entail the reverse sequence; that is, the business transaction is usually generated because there is already a level of intra-corporate relationship and mutual trust between particular sub-units.

As a consequence of this reversed sequence, mutual adaptations are likely to be less frequent in internal relationships and networks. External business relationships evolve from arms-length transactions with particular customers and suppliers. Therefore, at least initially, adaptation is a consequence of the discovery of partner characteristics (and needs) and of the investment opportunities that are opened up through accommodating the partner. In internal business relationships, by virtue of their membership of the same organisation, the partners are already tied to each other not only by information flows of an administrative nature but also by some degree of knowledge flow (Gupta & Govindarajan, 1991, 2000). Thus the potential business partners are to some degree known to each other and may mutually come together because they are already (perceived to be) somewhat compatible. Therefore the required adaptation may be perceived to be either absent or moderate. If we assume that business relationships are path-dependent, then internal relationships may get stuck in a low-adaptation trajectory.

2.2.2. The influence of the corporate context on internal and external subsidiary networks

All subsidiaries have to operate within a corporate context that has been shaped by various factors. One particularly relevant aspect is the notion of managerial ‘dominant logic’ (Bettis & Prahalad, 1986, 1995). Dominant logic is an information filter; ‘organisational attention is focused on data deemed relevant by the dominant logic. Other data are largely ignored...the “filtered” data are then incorporated into the strategy, systems and values’ (Bettis & Prahalad, 1995, p. 7). The dominant logic of the organisation clearly affects the behaviour and choices of the sub-units. In fact, from the viewpoint of Bettis and Prahalad (1995), ‘behaviour reinforcement’ is an important aspect of the concept. In the context of foreign subsidiaries, Birkinshaw and Ridderstråle (1999) have shown that what they call the ‘corporate immune system’, constrains subsidiary initiatives. Furthermore the HQs is the ‘custodian’ of the dominant logic of the enterprise as a whole, with a keen interest in how inter-subsidiary relationships develop and will exercise power and authority to influence these business relationships in such a way as to support or reinforce the dominant logic.

However, it is reasonable to expect that internal business ties and relationships will be more tightly constrained by the corporation’s dominant logic, than the more externally embedded relationships will be. The latter provide more opportunities to develop business initiatives in new directions. This is partly because external embedded relationships enhance organisational autonomy (Andersson & Forsgren, 1996; Yamin, 2002) and the ability to ‘hide’ initiatives (from HQ) until they are a fait accompli (Birkinshaw & Ridderstråle, 1999). It is also partly due to externally embedded subsidiaries being more likely to adopt an ‘inductive’ approach to opportunity or initiative definition based on trial and error. By comparison, the HQ’s approach to business opportunity definition is likely to be more deductively based and follow more closely the existing ‘recipes’ in the industry and stay within the trajectory of the MNC’s current competencies (Regnér, 2003; Yamin, 2002).

2.2.3. Corporate control, the internal capital market, and subsidiary business networks

In addition to being a member of the subsidiary’s network, the HQ has a formal authority to control, which it can exercise to further reinforce a subsidiary’s conformity. It has been argued that MNC headquarters effectively act as an internal capital market (Mudambi, 1999; Mudambi & Navarra, 2004); a principle consideration for the MNC HQ is control over the investment resources of the subsidiary to ensure that one subsidiary’s investment does not ‘crowd out’ investment opportunities for other subsidiaries. As internal embeddedness facilitates HQ’s control over the subsidiary (Andersson & Forsgren, 1996), it is likely that the HQ’s capital market function is more effective with respect to investment activities generated by the subsidiary’s internal business relationships.
Previous studies show that the MNC HQ is not necessarily very familiar with the subsidiary’s external business relationships and that this tends to weaken its control over the focal subsidiary (Andersson & Forsgren, 2000; Medcof, 2001). In particular, subsidiary investment in business relationships with external partners enjoys more effective autonomy as the subsidiary is less dependent on internal funding (Mudambi, 1999) to develop its business relationships. Thus, in comparison to internally embedded relationships, mutual adaptations in external networks are likely to be more extensive.

2.2.4. Location of subsidiary business networks

In the context of supplier–customer relationships, the significance of location is fully indicated by Tyre and Von Hippel (1997). They argue that adaptive learning has a ‘situated’ dimension – meaning that intimate knowledge of the physical context of a partner’s value-adding activity is a critical part of the process. Situated learning does not merely require ‘co-presence’ but, specifically, physical presence and a close familiarity with a partner’s activities in their location or situation. Goodall and Roberts (2003) also emphasise the connection between organisational knowledge and situated action. It is the situated nature of knowledge acquisition (and knowledge maintenance) that they argue is the basis of the ‘damage’ of distance.

From this perspective inter-subsidiary relationships will be constrained by geographical distance, as they are typically cross-border. Considering that developing a business relationship entails frequent face-to-face interaction between operational, functional and executive personnel, we surmise that cross-border business relationships may be at a disadvantage due to extra costs. By contrast, relationships between a subsidiary and its external partners are more frequently (but not always) within the host country and often within the same region or locality of the host country. Thus they are more likely (than internal relationships) to benefit from proximity. This reinforces the chances of having ‘deeper’ adaptations in subsidiaries externally focused business relationships.

3. Subsidiary importance: internal network effects and interactions

The conclusion from the previous section is that, compared to externally embedded subsidiaries, internal business relationships are (a) subject to greater control by the parent and more constrained by the corporate context; and (b) have a ‘narrower’ and ‘shallower’ pattern of business interactions. In this section we incorporate these considerations to derive hypotheses with respect to the effects of internal embeddedness on a subsidiary’s importance.

As noted in the introduction, a subsidiary’s importance reflects the extent to which its specialised competence is recognised by the MNC. To aid analytical focus and empirical investigation we distinguish between a subsidiary’s importance for production development and its importance for product development. Previous research has shown these as being robust constructs (Andersson et al., 2002). Importance to production reflects knowledge of a more duplicative nature (Gupta & Govindarajan, 2000) and is related to improving the current production practices of other subsidiaries. By comparison, to be important to other unit’s product development, a subsidiary needs technological and organisational competence of a more novel, less ‘duplicative’ nature, relative to the current practices in the MNC.

In the following sections we examine (a) how a subsidiary’s embeddedness in internal business relationships affects its importance for production and product development in the MNC and (b) how internal embeddedness interacts with external embeddedness. In particular, does internal embeddedness dilute or reinforce the positive effect of external embeddedness on a subsidiary’s production or product development importance?

3.1. Internal embeddedness and subsidiary importance

Recalling our discussion of the distinctive features of internal business relationships, it can be expected that competence generated within internally embedded relationships may obtain a high degree of ‘recognisability’ in the sense of being understood by potential receivers as being of value to them. Internal embeddedness is also likely to provide leverage for the focal subsidiary in the intra-MNC competition for organisational resources (Birkinshaw & Hood, 1998; Birkinshaw & Lingblad, 2005; Bouquet & Birkinshaw, 2008; Tsai, 2002) and boost the attention it gains from the HQ (Bouquet & Birkinshaw, 2008) and/or enhance their influence within the MNC by giving it ‘optimal distinctiveness’ vis-à-vis other subsidiaries (Garcia-Pont et al., 2009).

However, we would expect that internally embedded relationships are more likely to enhance the importance of the subsidiary to production development than to product development in the MNC. This is because the internally embedded relationships of a subsidiary are more likely to generate a higher percentage of ‘duplicative’ knowledge (Frost, 2001; Lane & Lubatkin, 1998; Pearce, 1999) of greater relevance to the current production practices of other subsidiaries. As a concept subsidiary importance is somewhat akin to an ‘informal’ mandate in as much as the HQs and other subsidiaries recognise the subsidiary as having specialised capabilities. Arguably, a subsidiary’s importance for production is akin to what Cantwell and Mudambi (2005) label as competence exploiting mandates which reflect superior competence in operational activities such as assembly production or market servicing. Internal embeddedness is more likely to be associated with competence exploiting rather than with competence creating mandates. Thus we put forward the following hypothesis:

H1a. There is a positive relationship between a subsidiary’s internal embeddedness and its importance for production development in the MNC.
Subsidiary importance entails that a subsidiary has competencies perceived as being superior to, or as ‘standing above’, the similar competencies of other subsidiaries (Andersson et al., 2002). There is a close affinity between a subsidiary’s importance for product development and its possessing a mandate for competence creating reflecting distinctive capabilities for research related production and strategic asset seeking investments (Cantwell & Mudambi, 2005, Table 1).

From our consideration of the features of internally embedded relationships (in Section 2), we infer that internally embedded relationships do not ‘score’ very highly with respect to a competence for product development. Thus, although a subsidiary’s internal embeddedness boosts its ‘visibility’ within the MNC organisation, such visibility may turn out to be a double-edged ‘sword’ and, paradoxically, work against the subsidiary’s importance for product development. Given that internal embeddedness does not usually enhance the subsidiary’s competence for product development, the visibility of the subsidiary merely helps to show the subsidiary as ‘standing below’ other units, as a ‘receiver’ rather than a ‘giver’ of the relevant competence vis-à-vis the rest of the MNC (Andersson et al., 2002). Thus, we put forward the following hypothesis:

**H1b.** There is a negative relationship between a subsidiary’s internal embeddedness and its importance for product development in the MNC.

3.2. The interaction between internal and external embeddedness

Internal and external subsidiary embeddedness may exert competing pressures on the subsidiary’s production and product development activities. While internal embeddedness promotes the development of the MNC’s existing areas of competence, this is less likely to be the case with external relationships. Thus efforts to develop competence in internally embedded networks may undermine the subsidiary’s efforts to develop competence within its external linkages (and vice versa). In effect, the subsidiary’s resources and managerial focus are pulled in different, possibly opposite, directions. This negative impact is likely to hold for both production and product development competencies. Thus, internal embeddedness is likely to impact negatively on the subsidiary’s production and product development importance in the MNC. Accordingly, the following hypothesis is warranted:

**H2a.** Internal embeddedness reduces (dilutes) the positive effect of external embeddedness on a subsidiary’s importance for production and product development.

On the other hand, as noted above, internal embeddedness increases a subsidiary’s corporate visibility and therefore also increases the visibility of its externally generated competence in production and technology development. Thus, even if internal embeddedness may not in itself enhance the subsidiary’s importance, it may help boost the visibility of the of the subsidiary’s competence for production or product development generated in its externally embedded networks. The enhanced visibility may in turn increase the importance that the rest of the corporate system and in particular the parent attach to the subsidiary’s competence generated in its external networks. In this sense, a subsidiary’s internal embeddedness may complement its external embeddedness in generating organisational importance.

**H2b.** Internal embeddedness enhances the positive effect of external embeddedness on a subsidiary’s importance for production and product development.

4. Data and methodology

The sample used in this study includes firms involved in a variety of manufacturing industries, such as paper, telecommunications, petrochemicals, hard materials, power systems, and equipment manufacturing. Initially we approached the managing directors of 20 international divisions/business areas, belonging to 13 Swedish MNCs. The MNCs were chosen from the Swedish OMX ‘Large Cap’ list. As the distance between corporate HQ and the actual operations in most of the (manufacturing) MNCs is rather large and we were particularly interested in subsidiary operations and activities, we chose to sample on the divisional/business area level, for two reasons. First, knowledge about subsidiary activities is primarily an intra-divisional matter since the divisionalisation of the MNC separates different businesses from each other (Egelhoff, 1988; Stopford & Wells, 1972). Second, the divisional level of the firm is closer to the subsidiary operations and the division HQ will have a direct managerial relationship with the subsidiaries. Although not all MNCs have a divisionalised/business area structure, none of the investigated firms had problems with pointing us to the relevant managerial echelon (HQ) for a particular product group in a particular subsidiary.

All divisions were highly international and 75 percent of them had more than half of their employees outside the home country. In these international divisions, we gathered data from 97 subsidiaries located in 13 European countries (92) and North America (5). Although the majority of the subsidiaries are based in Europe, they are widely distributed between northern, central, western and southern Europe and, therefore, the national and managerial cultures vary. On average, five subsidiaries were studied in each division, although the number varies between two and nine. The divisions’ HQs assisted in the selection of the subsidiaries that were representative of the division’s business activities. We did this with the intention of increasing the possibility of being able to draw general conclusions. On average, the subsidiaries in the sample accounted for over 50 percent of the divisions’ combined operations measured in terms of the number of employees. In 25 percent of the
Table 2
Descriptive statistics.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Subsidiary importance for product development</th>
<th>Subsidiary importance for production development</th>
<th>External embeddedness (Cronbach’s alpha = 0.72)</th>
<th>Internal embeddedness (Cronbach’s alpha = 0.89)</th>
<th>Subsidiary relative size</th>
<th>Cultural distance</th>
<th>Subsidiary Age</th>
<th>Subsidiary role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items statistics</td>
<td>Adaptation of product development by subsidiary in external relationships</td>
<td>Adaptation of production development by subsidiary in external relationships</td>
<td>Number of different knowledge areas directly involved in external relationships</td>
<td>Adaptation of product development by subsidiary in internal relationships</td>
<td>Adaptation of production development by subsidiary in internal relationships</td>
<td>Number of different knowledge areas directly involved in internal relationships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>2.82</td>
<td>2.18</td>
<td>2.65</td>
<td>2.22</td>
<td>3.52</td>
<td>2.19</td>
<td>1.79</td>
<td>2.58</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>1.25</td>
<td>1.70</td>
<td>0.91</td>
<td>0.90</td>
<td>0.95</td>
<td>1.86</td>
<td>1.61</td>
<td>2.09</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>5.00</td>
<td>4.50</td>
<td>4.40</td>
<td>6.00</td>
<td>5.00</td>
<td>5.00</td>
<td>6.00</td>
</tr>
</tbody>
</table>
presented in Table 2, i.e., its importance in the division regarding product and production development, its external and subsidiary level, meaning that each subsidiary has an observed value with regard to the measurements of the constructs used to test the hypotheses come from 97 subsidiaries belonging to 20 international divisions. The analysis was made on the subsidiary level, meaning that each subsidiary has an observed value with regard to the measurements of the constructs presented in Table 2, i.e., its importance in the division regarding product and production development, its external and internal embeddedness, its age, size, role in terms of R&D responsibilities for the division, and the cultural distance between the HQ and the subsidiary.

The data used to test the model were obtained through face-to-face interviews, using a standardised questionnaire, with managers at both the divisional HQ level and at the subsidiary level. The questionnaire was carefully developed incorporating feedback from several academics who identified questions that were vague, ambiguous or a source of possible bias, and pilot-tested on an experienced manager in an MNC who was not approached in the actual study. Subsequently, we modified some of the initial survey items, eliminated some and added others to the revised instrument. We also took precautions to limit potential common method variance by placing dependent and independent variables or items for constructs at different positions in the survey or changing scale anchors. In order to reduce the effects of consistency artefacts (Salancik & Pfeffer, 1977) we placed the dependent variables after the independent variables in the questionnaire. From the flow of the questionnaire it was improbable that respondents could guess hypothesised relationships between constructs, thereby avoiding social desirability bias.

In the first step, the interviews were carried out with the subsidiary’s top, sales and purchasing managers, respectively. The subsidiary’s CEO answered questions regarding the subsidiary’s overall performance, relationship to HQ and its other sister subsidiaries. The sales and purchasing managers answered questions specifically about the relationships with the subsidiary’s most important customers and suppliers, respectively, for a specific product group. After the interviews with the subsidiary managers in one division had been completed, the second step was to conduct interviews with the managing director of the divisional HQ, using the same type of standardised questionnaire. Through these interviews, we collected information about the managing director’s view of the subsidiary, considered in terms of the measurement of constructs (see the discussion below about how each construct was measured and which indicators and respondents were used). The personal interviews lasted for about two hours each, during which time problems involving concepts and interpretations of the questionnaire could be discussed and explained if necessary.

4.1. Subsidiary importance

The two dependent variables, the subsidiary’s importance for other units’ product development and production development, were assessed through the divisional HQ managers’ answers to two separate questions: “to what extent is this subsidiary important for other sister subsidiaries’ product development” and “to what extent is this subsidiary important for other sister subsidiaries’ production development”. Our operationalization is thus closely similar to that of Cantwell and Mudambi (2005) with respect to the competence creating subsidiary mandates. As a specific subsidiary should be assessed relative to other subsidiaries, managers at the divisional HQ were asked to consider the importance of a specific subsidiary. One benefit of using the divisional HQ managers’ responses to these questions is that it ensures separation from the independent variables ‘external’ and ‘internal’ embeddedness, where the respondents were subsidiary sales and purchasing managers. Another benefit is that the divisional management has the ability to compare different subsidiaries’ contributions to the development processes in the above-mentioned dimensions. A five-point Likert-type scale from 1 (very small) to 5 (very high) was used. The mean values for the two dependent variables used were 2.82 (S.D. 1.25) for product development and 2.18 (S.D. 1.70) for production development.

4.2. External and internal embeddedness of subsidiaries

It should be stressed that the emphasis in the interviews with the subsidiary managers was placed on the subsidiary’s most important product or group of products. Thus all questions about external and internal embeddedness in business relationships refer to a specific product or group of products, rather than to the subsidiary’s overall activity. This means that the embeddedness concerns customers and suppliers that relate to the same business activities, which increases the relevance of our indicators.

Embeddedness should reflect the capacity of the subsidiary under consideration to absorb new knowledge through, in this case, an external or internal business relationship. To make the assessment of embeddedness compatible with our measure of subsidiary importance to other MNC units, we need reliable indicators of how it has adapted its production and product development processes to its external and internal business partners, and of how extensive its contact pattern with these business partners is. For each subsidiary, we first asked the subsidiary’s sales and purchasing managers to assess to what extent a specific relationship with a customer or supplier had resulted in the subsidiary’s product and production development being adapted. The two indicators were measured on a five-point Likert-type scale from 1 (not at all) to 5 (very much). Secondly, as a third indicator, we also asked sales and purchasing managers to indicate the number of different functional areas from a given list that were involved in direct contact with these customers and suppliers. The functional
areas that they could choose from were the chief executive, the administration, the purchasing department, the sales department, the production department (i.e., the technical staff) and the R&D department. The greater the number of functional areas directly involved in the relationship, the greater is the investment in that relationship and, also, the greater is the ability to absorb useful technical knowledge. The respondents were also asked to indicate if the counterpart in question were external to the MNC or an internal 'sister' unit. As can be seen in Table 2, the mean values for the indicators used to represent the construct Subsidiary external embeddedness were 2.22 and 2.65 for the measures of adaptation and 3.52 for the number of functional areas having direct contact. The standard deviations were between 0.90 and 0.95 for all three indicators. The mean values for the indicators used to represent the construct Subsidiary internal embeddedness were 2.19 for the measure of product technology adaptation, 1.79 for the measure of production technology adaptation and 2.58 for the number of functional areas having direct contact. The standard deviations were 1.86, 1.61 and 2.09, respectively. The six indicators were used in a principle component analysis which revealed two distinct factors together explaining 68% of the variance. The indicators nicely divided themselves into two principle components that reflect external and internal embeddedness. The Cronbach’s alpha is 0.72 for external embeddedness and 0.89 for internal embeddedness (see Table 2). The two factors were used in the regression analysis.

4.3. Controls

As a subsidiary's size is an indication of its resources, we chose to include a subsidiary's relative size in the MNC as a control variable. Further, a subsidiary which has been a part of the MNC and operating over a longer period of time has more experience which may give it a greater degree of influence over strategic decisions compared to younger and less experienced subsidiaries. We also control for cultural distance between the subsidiary and HQ as, the greater the distance, the less likely it is that production and product development solutions developed in the subsidiary will receive legitimacy, and therefore be important for the MNC. In the modern MNC it is common that a specific subsidiary gets a mandate or charter to take on the responsibility for a certain activity within the MNC. Following Cantwell and Mudambi (2005), a subsidiary's competence creating a mandate can be expected to enhance its importance. To control for the effects of such responsibility being granted to a subsidiary and thereby impacting on its importance for other units' product and production development, we included a variable indicating the subsidiary's responsibility for R&D within the division. We asked both the subsidiary's CEO and the CEO of HQ to what extent a specific subsidiary was responsible for other units' R&D. The scores were added together and divided by two to reach a combined measurement of the subsidiary's responsibilities. We also control for the possible influence of expatriate managers in boosting a subsidiary's importance (through their impact on knowledge transfer, Yulin-Fang, Gua-Liang, Makino, & Beamish, 2010). We control for the presence of expats in the subsidiary and also for industry effects, by entering dummies. The appendix to the paper reports the matrix of correlation coefficients.

Before using the data in the regression analysis we took the precaution of analysing the possibility of common method variance. Although the questionnaire was constructed in such a way that the variables were spread across the questionnaire, to avoid socially desirable answers, and although we used different informants for the independent and dependent variables, we also conducted a 'Harman's One-factor test' on the items included in our model. In conducting this test we discovered several factors (four factors with an eigenvalue greater than 1), and the factors accounted for only 19, 16, 14 and 12 percent of the variance, respectively (Podsakoff & Organ, 1986), which shows that common method variance is not a serious problem in our data.

To investigate if there was a correlation between two or more of the independent (predictor) variables, augmenting the estimated $R^2$ of the model, we calculated the variance inflation factor (VIF). Different acceptable sizes of the VIF-value have been proposed and there does not seem to be a consensus of what cut-off value should be used; although 5 has been suggested as a reasonable number (Studenmund, 1992), others have suggested that even a value as high as 10 could be used (Hair, Black, Babin, Anderson, & Tatham, 2006; Marquardt, 1970). No VIF-values in any of the models exceeded 5 (see Table 3). In the final models, models 3 and 6, the highest calculated VIF-value was 1.54 respectively, with a mean of 1.297 (model 3) and 1.295 (model 6). Consequently, multicollinearity does not seem to threaten the estimates of the models and there is no reason that this should cause misinterpretation of the predictive ability of the regression model results.

5. Results

We first tested the control variables on their own against the two dependent variables subsidiary importance for product development and subsidiary importance for production development (see Equations 1 and 4). We then employed the independent variables external and internal embeddedness to analyse their impact on subsidiary importance on the respective dependent variables (see Equations 2 and 5). In a final step, the interaction between external and internal embeddedness was introduced to test Hypothesis 2, i.e. that internal embeddedness dilutes the positive effects of external embeddedness (see Equations 3 and 6 in Table 3).

None of the control variables employed in the different regressions significantly explains any variance in the subsidiary's importance for either the product or production development of other units (see Equations 1 through 6 in Table 3), except for subsidiary role, which is significant at the five per cent level in regression 1. In Hypothesis 1a we stated that internal embeddedness has a positive effect on the subsidiary's importance for production development in the MNC and in Hypothesis 1b we stated that internal embeddedness has a negative effect on the subsidiary's importance for product
Table 3
Regressions.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Regression 1</th>
<th>Regression 2</th>
<th>Regression 3</th>
<th>VIF for model 3</th>
<th>Regression 4</th>
<th>Regression 5</th>
<th>Regression 6</th>
<th>VIF for model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsidiary relative size</td>
<td>0.02 (0.19)</td>
<td>-0.10 (0.92)</td>
<td>0.10 (0.90)</td>
<td>1.26</td>
<td>0.02 (0.12)</td>
<td>0.05 (0.44)</td>
<td>0.06 (0.55)</td>
<td>1.29</td>
</tr>
<tr>
<td>Expats</td>
<td>0.01 (0.07)</td>
<td>-0.02 (0.20)</td>
<td>-0.03 (0.22)</td>
<td>1.33</td>
<td>-0.13 (0.90)</td>
<td>-0.15 (0.90)</td>
<td>-0.13 (0.90)</td>
<td>1.33</td>
</tr>
<tr>
<td>Cultural distance</td>
<td>-0.19 (-1.62)</td>
<td>-0.20 (-1.72)</td>
<td>-0.20 (-1.73)</td>
<td>1.34</td>
<td>-0.11 (-0.90)</td>
<td>-0.11 (-0.90)</td>
<td>-0.09 (-0.77)</td>
<td>1.33</td>
</tr>
<tr>
<td>Entry mode</td>
<td>-0.10 (-0.90)</td>
<td>-0.10 (-0.94)</td>
<td>-0.10 (-0.96)</td>
<td>1.17</td>
<td>0.08 (0.71)</td>
<td>0.06 (0.50)</td>
<td>0.09 (0.77)</td>
<td>1.18</td>
</tr>
<tr>
<td>Subsidiary age</td>
<td>0.05 (0.49)</td>
<td>0.07 (0.65)</td>
<td>0.07 (0.64)</td>
<td>1.18</td>
<td>-0.04 (-0.36)</td>
<td>-0.05 (-0.39)</td>
<td>-0.04 (-0.40)</td>
<td>1.19</td>
</tr>
<tr>
<td>Subsidiary role</td>
<td>0.28 (2.35)*</td>
<td>0.19 (1.55)</td>
<td>0.18 (1.47)</td>
<td>1.49</td>
<td>0.11 (0.86)</td>
<td>0.05 (0.40)</td>
<td>0.12 (0.96)</td>
<td>1.49</td>
</tr>
<tr>
<td>Industry dummy 1</td>
<td>-0.09 (-0.79)</td>
<td>-0.15 (-1.25)</td>
<td>-0.16 (-1.26)</td>
<td>1.54</td>
<td>0.06 (0.52)</td>
<td>0.04 (0.32)</td>
<td>0.12 (0.96)</td>
<td>1.54</td>
</tr>
<tr>
<td>Industry dummy 2</td>
<td>0.01 (0.02)</td>
<td>-0.06 (-0.49)</td>
<td>-0.06 (-0.53)</td>
<td>1.34</td>
<td>-0.08 (-0.62)</td>
<td>-0.11 (-0.89)</td>
<td>-0.05 (-0.45)</td>
<td>1.34</td>
</tr>
<tr>
<td>Subsidiary internal embeddedness</td>
<td>-0.25 (-2.34)*</td>
<td>-0.26 (-2.32)*</td>
<td>1.24</td>
<td>-0.15 (-1.32)</td>
<td></td>
<td>-0.10 (-0.82)</td>
<td></td>
<td>1.24</td>
</tr>
<tr>
<td>Subsidiary external embeddedness</td>
<td>0.24 (2.30)*</td>
<td>0.25 (2.29)*</td>
<td>0.25 (2.29)*</td>
<td>1.17</td>
<td>0.22 (1.96)*</td>
<td>0.19 (1.72)</td>
<td></td>
<td>1.16</td>
</tr>
<tr>
<td>Interaction term (external x internal)</td>
<td>0.03 (0.23)</td>
<td>0.03 (0.23)</td>
<td>0.03 (0.23)</td>
<td>1.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.16</td>
<td>0.24</td>
<td>0.24</td>
<td>0.08</td>
<td>0.13</td>
<td>0.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj. $R^2$</td>
<td>0.08</td>
<td>0.14</td>
<td>0.13</td>
<td>0.01</td>
<td>0.02</td>
<td>0.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$-value</td>
<td>1.90</td>
<td>2.42*</td>
<td>2.18*</td>
<td>0.56</td>
<td>1.15</td>
<td>1.61</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = 0.05; ** = 0.01; *** = 0.001; numbers are standardised betas and t-values within parentheses.
technology embeddedness is negative (though insignificant). Equation 2 supports Hypothesis 1b as subsidiary internal embeddedness has a significantly negative effect on the subsidiary’s importance for other units’ product development.

In Hypothesis 2a we stated that internal embeddedness will dilute the positive effect of external embeddedness on a subsidiary’s importance for production and product development. In Hypothesis 2b we stated that internal embeddedness will reinforce the positive effect of external embeddedness on a subsidiary’s importance for production and product development. The results in Equations 3 and 6 in Table 3 reveal that, for the subsidiary’s importance for product development, the inclusion of the interaction term has no effect on either the negative effect from internal embeddedness nor the positive influence from external embeddedness. Both constructs are practically unaffected by the inclusion of the interaction term. With respect to the subsidiary’s importance for production development, the positive and significant effect of external embeddedness becomes insignificant after the interaction term is introduced into the regression. The insignificant effect from internal embeddedness is stable across all the regressions concerning production development. The interaction term as such is negative and ‘significant’ at the five percent level when regressed against the subsidiary’s importance for other units’ production development. Thus Hypothesis 2b concerning a positive interaction effect from internal embeddedness is rejected. Hypothesis 2a concerning a negative interaction effect from internal embeddedness is partially supported: The interaction between internal and external embeddedness does not affect the positive influence of external embeddedness on product development, however it does have a negative effect on the influence of external embeddedness for a subsidiary’s importance for production development.

Looking at the models’ capabilities of explaining the effects on the dependent variables, i.e. the $R^2$ and $F$-values of the six models, we can conclude that a subsidiary’s internal and external embeddedness, together explain roughly one quarter of the variation in the dependent variable “Subsidiary importance for MNC product development” which is a rather high degree of explanation. Furthermore, we see that regressions 2 and 3 are significant at the five per cent level. The degree of variation explained for the dependent variable “Subsidiary importance for MNC production development” is lower and the results are not as consistent. Furthermore, none of the models 4–6 has a significant $F$-value.

6. Conclusion and discussion

This paper has addressed a hitherto neglected issue in the MNC subsidiary literature, namely the effects of internal business embeddedness on a subsidiary’s organisational performance. Prior literature has not fully addressed how internal embeddedness may be distinctive in terms of its effect on key subsidiary roles, such as knowledge development. Current discussion of this issue has been of a rather general and conceptual character, with very limited empirical investigation of the effect of a subsidiary’s internal embeddedness on its competence or capability development. The recent study by García-Pont et al. (2009) does empirically investigate the impact of internal embeddedness on the subsidiary but its focus is not the subsidiary’s importance but a different, though potentially related outcome, namely the subsidiary’s ‘distinctiveness’. Moreover, García-Pont et al. (2009) do not appear to shed any light on how internal and external embeddedness interact in generating outcomes for the subsidiary. Our aim, by comparison, has been to specifically build on existing studies which have demonstrated a significant and robust connection between external embeddedness and a subsidiary’s importance for production and product development in the MNC of which it is a part. Specifically, we have investigated (1) whether a subsidiary’s internal embeddedness has any effects on its importance, once we control for the level of external embeddedness, and other subsidiary characteristics that could potentially affect its importance; and (2) whether and how internal embeddedness may interact with external embeddedness in generating a subsidiary’s importance.

Overall our study confirms the extant knowledge in that external embeddedness is shown to have pre-eminence in generating a subsidiary’s competence in both production and product development. However the finding that internal embeddedness negatively impacts a subsidiary’s importance for product development and, especially, the finding of a negative interaction effect on a subsidiary’s importance for production development, suggests that the extant studies’ near-exclusive focus on external embeddedness is unwarranted. Our study makes an important contribution by carefully delineating why internal embeddedness may be distinctive in terms of its impact on a subsidiary’s importance. A further contribution is to highlight the possibility that internal embeddedness may actually reduce the positive impact of external embeddedness on the subsidiary’s importance. Our study strongly suggests that general propositions linking a subsidiary’s embeddedness and its strategic capabilities that are based only on the consideration of external (or, of course, only of internal) embeddedness, should be regarded with caution if not scepticism. It is surely necessary that propositions about subsidiary capabilities are based on a more holistic view of the impacts of all of its networks.

Data limitations do not allow us to further investigate the rationale behind the rather uneven pattern of results with respect to interaction effects. In particular it would be important to investigate further whether (and why) internal embeddedness reduces the positive effect of external embeddedness on a subsidiary’s importance for production development but not for product development. The findings with respect to interactions are somewhat counter-intuitive, as it is more plausible for the interaction effect to be negative with respect to product development. So clearly there is scope for further theoretical and empirical investigation of the interactions between internal and external embeddedness. Another line of research could beneficially investigate the impact of a subsidiary’s embeddedness on its corporate ‘visibility’ and, specifically, whether the internal embeddedness does in fact enhance corporate ‘visibility’ more than external
embeddedness. This would enrich our understanding of the process through which a subsidiary’s importance may be gained, enhanced or damaged.

In terms of practitioner implications, we note that a subsidiary’s importance is, ultimately, ‘useful’ to it as the basis for it gaining influence on strategy within the MNC (Andersson et al., 2007). From this perspective, our findings suggest that in the struggle to gain influence, a subsidiary’s technical and organisational capabilities may be more important than its involvement in internal MNC networks and hence its corporate ‘visibility’. Thus a subsidiary’s capabilities may well attract the attention of HQ (Bouquet & Birkinshaw, 2008) even if it is not very ‘visible’ in terms of a high degree of internal corporate involvement in internal MNC networks and hence its corporate ‘visibility’. Thus a subsidiary’s capabilities may well attract the position of the subsidiary in the internal competition for resources and/or influence within the MNC.

Acknowledgements

The authors gratefully acknowledge useful comments and suggestions for improvements from three anonymous reviewers. The usual caveat applies.

Appendix A. Correlation matrix.

<table>
<thead>
<tr>
<th>Subsidiary importance product</th>
<th>Subsidiary importance production</th>
<th>Subsidiary size</th>
<th>Expat</th>
<th>Cultural distance</th>
<th>Entry mode</th>
<th>Subsidiary age</th>
<th>Subsidiary role</th>
<th>Ind. 1</th>
<th>Ind. 2</th>
<th>Subsidiary internal embeddedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsidiary importance product</td>
<td>.50***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsidiary importance production</td>
<td></td>
<td>.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsidiary size</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Expat</td>
<td>.20</td>
<td>.14</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Cultural distance</td>
<td>.13</td>
<td>.20</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>.19</td>
<td>.17</td>
<td>.03</td>
<td>.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsidiary age</td>
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<td>.12</td>
<td>.13</td>
<td>.10</td>
<td>.19</td>
<td>.08</td>
<td>.15</td>
<td>.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsidiary role</td>
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<td>.22**</td>
<td>.13</td>
<td>.19</td>
<td>.08</td>
<td>.28**</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Ind. 1</td>
<td>.08</td>
<td>.14</td>
<td>.12</td>
<td>.17</td>
<td>.11</td>
<td>.12</td>
<td>.22**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind. 2</td>
<td>.02</td>
<td>.06</td>
<td>.06</td>
<td>.03</td>
<td>.03</td>
<td>.24</td>
<td>.03</td>
<td>.15</td>
<td>.20</td>
<td>.22**</td>
</tr>
<tr>
<td>Subsidiary internal embeddedness</td>
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<td>.06</td>
<td>.06</td>
<td>.04</td>
<td>.03</td>
<td>.03</td>
<td>.01</td>
<td>.02</td>
<td>.22</td>
<td>.06</td>
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<tr>
<td>Subsidiary external embeddedness</td>
<td>.22**</td>
<td>.24**</td>
<td>.17</td>
<td>.03</td>
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<td>.08</td>
<td>.04</td>
<td>.22**</td>
<td>.12</td>
<td>.06</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

References


