



A Missing Operationalization: Entrepreneurial Competencies in Multinational Enterprise Subsidiaries



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We seek to provide a comprehensive operationalization of firm-specific variables that constitute multinational enterprise subsidiary entrepreneurial competencies. Towards this objective, we bring together notions from the fields of entrepreneurship and international business. Drawing on an empirical study of 260 subsidiaries located in the UK, we propose a comprehensive set of scales encompassing innovativeness, risk-taking, proactiveness, learning, intra-multinational networking, extra-multinational networking and autonomy; which capture distinct subsidiary entrepreneurial competencies at the subsidiary level. Research and managerial implications are discussed.

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Introduction

A source of competitive advantage for contemporary multinational enterprises (MNEs) is their ability to leverage distinct competencies of internationally dispersed subsidiaries. Much research under the modern stream of subsidiary development has focused on the different roles that subsidiaries can play within the MNE system, drawing on subsidiary-specific competencies (Rugman et al., 2011). Despite the existence of many studies espousing this heterarchical subsidiary-focused approach, there is still no clear understanding as to the development of distinctive competencies at the subsidiary level (Young and Tavares, 2004; Birkinshaw et al., 2005; Dimitratos and Jones, 2005). Despite its significance, the notion of subsidiary entrepreneurship, in terms of competencies that could contribute both to subsidiary- and MNE-level development, has largely been neglected in the relevant literature (Rugman and Verbeke, 2001; Paterson and Brock, 2002; Boojihawon et al., 2007). In order to advance research into the field of MNE subsidiary, we require robust constructs that would capture entrepreneurial competencies of those affiliates (cf. Brown et al., 2001; Dimitratos et al., 2012). In this article, we seek to provide such an operationalization of MNE subsidiary entrepreneurial competencies, which is still missing from the literature.

In spite of the importance of international entrepreneurship as a major stream of research, and the generally acknowledged presence of entrepreneurship in large and established organizations (Ahuja and Lampert, 2001; Rugman and Verbeke, 2001), study of MNEs and their subsidiaries in the international entrepreneurship field has received limited consideration (Young et al., 2003; Boojihawon et al., 2007). As subsidiaries pursue local opportunities likely to be exploited by the entire multinational system (Birkinshaw, 1997), subsidiary entrepreneurship may be beneficial not only for the individual subsidiary, but also for the entire MNE (Bartlett and Ghoshal, 1989; McEvily and Zaheer, 1999; Birkinshaw and Hood, 2001).

Which are the competencies of an entrepreneurial MNE subsidiary? Birkinshaw and his colleagues (Birkinshaw, 1997, 1999; Birkinshaw et al., 1998; Ambos et al., 2010) offer interesting insights into this theme through their work on subsidiary entrepreneurial initiative. Among others, these scholars find subsidiary initiative to be promoted by high levels of distinctive subsidiary competencies, and suppressed by high levels of decision centralization (Birkinshaw et al., 1998; Birkinshaw, 1999). In addition, only when subsidiaries evoke headquarters attention are they able to enhance their influence through initiatives (Ambos et al., 2010). Our study concurs with observations (Birkinshaw, 1997; Wright, 1999; Dess et al., 2003) suggesting that the subsidiary entrepreneurship theme deserves further investigation. It specifically seeks to address this gap through providing insights into entrepreneurship in the MNE subsidiary, and more specifically, into the subsidiary's distinctive entrepreneurial competencies by drawing on a literature review of studies in the fields of entrepreneurship and international business.

Instead of solely considering the three dimensions of innovativeness, risk taking, and proactiveness vis-à-vis competitors that studies have typically used to capture entrepreneurship (e.g., Covin and Slevin, 1991) and international entrepreneurship (e.g., McDougall and Oviatt, 2000), this article seeks to provide a holistic view of entrepreneurial subsidiary competencies. Analytically,

it seeks to identify MNE subsidiary-specific competencies and capture entrepreneurship as firm-level behaviour. Towards this objective, we provide evidence from a large-scale study on 260 MNE subsidiaries based in the UK. The research objective of this study is to identify and test a comprehensive set of scales that form distinct subsidiary entrepreneurial competencies through a factor analysis of the different constructs that have been proposed in the literature as depicting firm-level entrepreneurship. The findings of this analysis bring into light the multi-dimensional nature of the subsidiary entrepreneurship construct.

The remainder of this article is structured as follows. The next section develops the background to subsidiary entrepreneurial competencies based on the entrepreneurship and international business literatures. Then, the research methodology is discussed. Afterwards, the results and discussion from the data analysis follow. The implications for theory and management are reported in the final section.

Research background

Drawing upon internalization theory, Buckley and Casson (2009) develop the notion of the “global factory”, within a global systems view of international business, with MNEs fine slicing their value adding activities regionally or globally. However, Rugman and Verbeke (2001) argue convincingly that this does not imply that each subsidiary performs a single well-defined role within the MNE; and, there is ample evidence of the perspective of the MNE as a differentiated network of dispersed operations, with a configuration of capabilities and competencies that cannot be controlled fully through hierarchical decisions taken by parent headquarters. This is clearly shown in the work of Narula and colleagues on R&D in a range of science- and technology-based sectors (Narula, 2002; Criscuolo and Narula, 2007; Narula and Santangelo, 2009). In a related vein, Birkinshaw and Pedersen (2009) support the notion that the subsidiary is a valid unit of analysis in its own right, and hence, it should be possible to unbundle resources and capabilities between the subsidiary and the MNE.

Cantwell and Mudambi (2005) distinguish between competence-exploiting subsidiaries and competence-creating subsidiaries (see also, Hedlund, 1986; Gupta and Govindarajan, 2000); and, Rugman and Verbeke (2001) define the characteristics of these competencies in terms of subsidiary specific advantages generated as a result of the affiliate’s autonomous activities. Rugman and Verbeke (2001) define subsidiary-specific advantages as idiosyncratic strengths developed by host country managers building upon host country specific advantages; and, Rugman et al. (2011) argue that these advantages result from a) combining knowledge transferred from the network with newly created knowledge; b) autonomous subsidiary roles; and, c) subsidiary knowledge embedded in idiosyncratic host country locations.

The current study extends Rugman and Verbeke’s (2001) work by introducing a specific form of subsidiary specific advantages, namely that of entrepreneurial competencies. These competencies can accommodate the entrepreneurial activities of the MNE internationally (Zahra, 2005). In MNEs, these competencies may include global vision and entrepreneurial multinational enterprise networking (Boojihawon et al., 2007); and, are purported to generate value to the stakeholders of the firm (Birkinshaw, 1997).

Following a dynamic capabilities perspective, entrepreneurial competencies in the present research are perceived to be the combination of activities and processes, which allow the firm to exploit opportunities and generate value (cf. Prahalad and Hamel, 1990; Stevenson and Jarillo, 1990; Teece et al., 1997). McDougall et al. (1994) and Autio et al. (2000) explain how firms can exploit their unique entrepreneurial competencies to expand into international markets; and Birkinshaw (2000, p. 8) develops the notion of subsidiary entrepreneurial initiative that refers to the “proactive and deliberate pursuit of a new business opportunity by a subsidiary company” designed to develop the subsidiary’s value-added scope (Birkinshaw et al., 1998).

MNE subsidiaries are distinctive from independent firms because of their status as “affiliates”, and hence, are subject to the ultimate control of their parent firms. Thus, their cross-border relationships with their parent corporation and other subsidiaries create very distinctive opportunities and challenges in developing entrepreneurial competencies. This is especially pertinent to the competencies of intra-MNE networking and autonomy, which as shown following, are unique to subsidiaries as opposed to independent firms. In addition, however, cross-border, intra-MNE relationships present greater complexities and challenges in the area of learning for MNE affiliates as opposed to independent firms.

Table 1 shows how different conceptualizations in the international business literature relate to the theme of subsidiary entrepreneurship. The emerging major aspects linked to subsidiary entrepreneurship encompass the MNE subsidiary activities, hence are linked to MNE affiliates rather than independent firms. These aspects of Table 1 were identified through an examination of the literature in the entrepreneurship and international business fields. Specifically, after researching relevant aspects of the entrepreneurship literature, the review of international business literature offered us insights on which of these variables can be salient to MNE subsidiary activities. This analysis rendered a content-analysis summary table (cf. Miles and Huberman, 1994), and Table 1 represents a refined version of it.

Entrepreneurial competencies derive from an entrepreneurial firm’s strategic orientation. Such an orientation is also linked to the exercise of entrepreneurial judgment in decision-making (Casson, 1982, 2005; Casson and Godley, 2007). This notion of “entrepreneurial orientation” comprises three distinct attitudinal dimensions, namely, innovativeness, risk-taking and proactiveness. The literature on entrepreneurial orientation is very extensive, having been referenced in 256 scholarly journal articles by the end of 2010. It is deemed by many scholars to be an aspect of corporate entrepreneurship (Covin and Lumpkin, 2011). Lumpkin and Dess (1996, p. 136) further distinguish between “entrepreneurship” and “entrepreneurial orientation”: “the essential act of entrepreneurship is new entry”; while “an entrepreneurial orientation refers to the processes, practices and decision-making activities that lead to a new entry.” This conceptualization of entrepreneurial orientation is thus compatible with the definition of entrepreneurial competencies as applied in this article. Entrepreneurial

Table 1
Key aspects relating to entrepreneurship in the MNE literature

| | | |
|--|---|--|
| Innovativeness, risk-taking, proactiveness | Subsidiaries contribute to innovative activities in MNEs | Birkinshaw, 1997, 2000 Birkinshaw et al., 1998, 2005 |
| | Intra-subsidiary risk-taking drivers of subsidiary competence upgrading | Hedlund, 1986 Birkinshaw and Hood, 1998 |
| | Subsidiaries engage in proactive performance-oriented activities | Birkinshaw, 1997 Ambos et al., 2010 |
| Learning | MNEs can assimilate, integrate and create knowledge through their portfolio of subsidiaries | Rugman and Verbeke, 2001 Frost et al., 2002 Ambos et al., 2006 |
| | Intra-MNE learning is a key source of competitive advantage and firm-level innovation | Birkinshaw et al., 1998 Bartlett and Ghoshal, 1989 Lewin and Massini, 2003 |
| Networking | Networking in MNEs (corporate/internal and external networks) linked to competence development and subsidiary innovative potential | Andersson and Forsgren, 1996 Andersson et al., 2002, 2005 |
| Autonomy | Subsidiary autonomous activities and processes linked to subsidiary development, innovative potential and entrepreneurial initiatives | Forsgren and Johanson, 1992 Gupta and Govindarajan, 1994 Birkinshaw and Morrison, 1995 |

orientation is commonly accepted as being entrepreneurial firm level behaviour (Covin and Lumpkin, 2011), which promotes initiative (Burgelman, 1983); and recent results of a meta-analysis by Rauch et al. (2009) indicate that EO is a significant predictor of firm performance.

Despite its established importance, there is continuing debate about issues of the entrepreneurial orientation dimensions, in terms of their number and measurement; and concerning boundaries differentiating core entrepreneurial orientation factors from other notions (e.g., Lumpkin and Dess, 1996; Merz and Sauber, 1995). However, the three-dimensional EO construct, comprising innovativeness, proactiveness and risk-taking, is widely accepted: its “conceptualization and the concomitant measurement have been employed in more than 200 studies in a wide variety of fields” (George and Marino, 2011, p. 990).

Innovativeness reveals a tendency to engage in and support novelty, experimentation and creativity, and, therefore, it represents a departure from existing practices (Guth and Ginsberg, 1990). *Proactiveness* refers to a forward-looking perspective of anticipating and acting on future market needs, thereby creating first-mover advantages (Lumpkin and Dess, 1996). *Risk-taking* involves the propensity to commit significant resources to exploit opportunities or engage in activities and strategies with highly uncertain outcomes (Keh et al., 2002). McDougall and Oviatt's (2000) classic definition of international entrepreneurship also espouses this three-dimensional conceptualization of innovative, proactive and risk-taking behaviour.

Aside from the above three subsidiary competencies, the literature review undertaken for this article indicated three additional competencies. Early on, Knight (1921) viewed *learning* as an important element of the dynamic nature of entrepreneurial activity. Previous literature has acknowledged that firm-level learning is associated with the development of competencies needed to behave in an entrepreneurial manner (Ireland et al., 2001; Zahra et al., 2001). Minniti and Bygrave (2001) describe entrepreneurship as a process of learning. In a related vein, entrepreneurship researchers have introduced the notion of “entrepreneurial learning”, which is closely linked to entrepreneurial action (Cope, 2005; Voudouris et al., 2011). As Table 1 reveals, an important part of the MNE literature has particularly focused on intra-firm learning as a key source of firm-level innovation (e.g., Bartlett and Ghoshal, 1989; Birkinshaw et al., 1998; Lewin and Massini, 2003). It may be related to learning from internal and external MNE customers. Hence, it is argued that subsidiary learning is also a critical entrepreneurial competence (Holm and Pedersen, 2000; Frost et al., 2002).

In addition, intra-MNE learning is augmented through social interaction and networking (Noorderhaven and Harzing, 2009). In the entrepreneurship literature, Jack and Anderson (2002) consider *networking* as a key element of the entrepreneurial process. Involvement in networks drives entrepreneurial phenomena through providing access to different types of valuable resources, such as physical capital (Zimmer and Aldrich, 1987; Bates, 1997), and mainly intangible resources in the form of advice and information (Johannisson, 1996; Singh et al., 1999). Other researchers postulate that networks are particularly important not only for accessing resources, but also for reducing the cost of resources essential for entrepreneurial activity (Cromie et al., 1994; Johannisson, 2000).

Table 1 shows that studies confirm the notion of networking as an entrepreneurial competence at the subsidiary level. In particular, in considering the individual subsidiary as the unit of analysis, two distinctively different business networks need to be examined. The first is the subsidiary's internal network, consisting of relationships developed within the MNE; and, the second the external network of the subsidiary, comprising relationships in the local and international markets. Andersson and Forsgren (1995, 1996) use the term corporate embeddedness to refer to intra-corporate relationships, that is, a subsidiary's relationships both with the parent company and other MNE subsidiaries. External non-corporate network relationships are also relevant when the resources and capabilities provided by the parent do not satisfy the requirements of the local environment. Such internal and external relationships, termed “dual embeddedness” by Meyer et al. (2011), may play an important role in subsidiary competence development (Andersson et al., 2002; Schmid and Schurig, 2003; Ciabuschi et al., 2011; Figueiredo, 2011). Stevenson and Jarillo (1990) argue that firms facilitating the development of internal and external networks exhibit increased levels of entrepreneurial behaviour. Consequently, we posit that subsidiary networking constitutes another important entrepreneurial competence.

Moreover, the dimension of *autonomy* is used to capture firm-level entrepreneurship in previous entrepreneurship research (Lumpkin and Dess, 1996). Autonomy refers to independent activities and processes, free of organizational constraints, which allow subsidiary entrepreneurial initiatives to take place. Although autonomy as a dimension of corporate entrepreneurship is discussed in the literature, there seems to be limited empirical research on this dimension (Antoncic and Hisrich, 2001; Thornhill and Amit, 2001). Subsidiary-focused research has considered autonomy as both a prerequisite and desired outcome of subsidiary development (Birkinshaw and Morrison, 1995; Birkinshaw and Hood, 1998; Paterson and Brock, 2002). Studies have specifically linked the notion of autonomy to the subsidiary's innovative potential (Jarillo and Martinez, 1990; Gupta and Govindarajan, 1994; Keupp et al., 2011). Particularly with respect to subsidiary entrepreneurship, the concept of autonomy has been positively associated with the pursuit of entrepreneurial initiatives at the subsidiary level (Birkinshaw, 1997, 2000; Birkinshaw and Hood, 1998). In addition, Birkinshaw and Pedersen (2009) view subsidiary autonomy as an input that drives subsidiary development.

Autonomy is conceptualized here as an entrepreneurial competence, representing the ability to undertake autonomous activities and processes that influence the implementation of entrepreneurial activities. Following this conceptualization, Taggart (1997, p. 55) refers to autonomy as a “decision-making process”; and, Birkinshaw (1997) suggests that entrepreneurial initiatives result from autonomous actions that seek to develop the value-added scope of the subsidiary (see also, Birkinshaw et al., 1998).

The literature also, however, reveals that the associations between autonomy and entrepreneurial competencies can be complex. These associations may be direct or indirect, with autonomy mobilizing or facilitating entrepreneurial initiatives through other resources and competencies (Ghoshal and Bartlett, 1988; Hood and Taggart, 1999; Forsgren et al., 1999; Rugman and Verbeke, 2001). The literature review on centralization versus autonomy by Young and Tavares (2004) highlights other complexities associated with the origins and evolution of autonomy, which may be assigned by the parent firm (see for example, Criscuolo and Narula, 2007), or assumed through subsidiary behaviour (Birkinshaw, 1997, 2000). There can be potentially negative as well as positive effects of autonomy including “empire building” (Birkinshaw and Ridderstråle, 1999) or disintegrative tendencies (Tavares, 2001). The assignment of autonomy may be associated with the allocation of specific roles and mandates to subsidiaries, but Birkinshaw (1996) identified circumstances where these mandates (and hence autonomy) may be lost as well as won. Furthermore, there are possible relationships between variables, as, for example, too much autonomy may interfere with the subsidiary's interest in internal networking; while extra-MNE networking by the subsidiary is likely to adversely impact on learning that involves the MNE headquarters. Recent work by Ambos et al. (2010) shows that subsidiary initiatives have a direct effect on subsidiary autonomy, albeit with the caveat that initiatives may increase control by headquarters, reducing subsidiary autonomy. Despite these complexities, the apparent conclusion is that autonomous activities represent an inherent dimension of subsidiary entrepreneurial competencies. In an important contribution, Venaik et al. (2005) find dual independent paths to improved performance, one through subsidiary autonomy and the other through networking and inter-unit learning.

In sum, based on this discussion, the aim of this article is to establish to what extent MNE subsidiaries possess their own entrepreneurship-creating competencies that can be captured through a comprehensive set of scales comprising the six dimensions of *innovativeness, risk-taking, proactiveness, learning, networking and autonomy*. There are clearly questions concerning the boundaries of “entrepreneurial competencies”. These six dimensions have strong support in the literature, but given the potential significance of this theme in theory and practice, it is likely to encourage additional debate and contributions. Two additional perspectives may be useful in such debates on concept boundaries. These are derived from the extensive entrepreneurial orientation literature but the conceptualizations have wider relevance.

The first derives from the work of Satori (1970) on the formation of a concept and the level of abstraction at which it exists, as well as the basic properties of a concept (Osigweh, 1989). Having understood the primary dimensions of a concept and established boundary conditions, it may be useful to apply a concept to a new setting, in particular through concept travelling; this entails building on the original definition (in this case the six-dimensional environmental competencies) by identifying additional characteristics in order to examine more specific cases. An illustration as applied in an entrepreneurial orientation context is developed in George and Marino (2011).

A second and different perspective which might, nevertheless, contribute to an understanding of boundary conditions is through the development of a conceptual framework of entrepreneurial competencies and firm performance. Drawing upon Lumpkin and Dess (1996), included within this framework would be key contingencies involving environmental factors (environment and industry characteristics) and organizational factors (structure, strategy, firm resources, top management team characteristics and strategy-making processes). For instance, such organizational factors could be MNE processes associated with political adroitness or distribution of power within the organization. Thus the boundaries are set by differentiating core entrepreneurial competencies from the many contingent factors which may also influence firm performance.

Research method

Sample and data collection

The data was collected as part of an Economic and Social Research Council project that investigated the determinants of entrepreneurial initiatives in MNE subsidiaries operating in the UK. The sample included European (namely Dutch, French and German), US and Japanese subsidiaries based in the UK since these countries had the highest levels of foreign direct

investment inflows in the UK. The database was compiled from the respective National Chambers of Commerce and *Dun and Bradstreet*. It involved 14,508 subsidiaries, constituting the entire population of subsidiaries from these countries in the UK. Due to statistical and cost considerations, we constructed a random sample of 2250 subsidiaries from these subsidiaries. When we excluded subsidiaries that were not eligible to participate in the survey due to termination of operations, acquisition by other companies etc., the actual number of subsidiaries ended up being 1770. The sample included subsidiaries from a range of sectors including chemicals and pharmaceuticals, mechanical engineering, electronics, vehicles, logistics operations and financial services.

The data collection from the 1770 subsidiaries involved three postal waves and two rounds of follow-up phone calls in between. The questionnaires were posted to subsidiary managing directors, while a second top management respondent participated in the survey in 10% of the sample in order to ascertain inter-rater reliability. The response rate was 16% that corresponded to a total number of 264 responses. Four of those questionnaires had missing values in the present statistical analysis, rendering 260 responses to use in this article. The 16% response rate was satisfactory and comparable to that of other recent studies that dealt with large-scale surveys, which targeted high-level managers (e.g., Harzing and Noorderhaven, 2006). Non-response bias was accounted for by comparing responses across the three postal waves. Moreover, there were no statistically significant differences in terms of size and age of the subsidiary; and, level of entrepreneurial initiative in the cases where two managers in the subsidiaries answered the questionnaire.

The questionnaire

In order to develop the subsidiary entrepreneurial competence set of scales, we followed the recommendations for scale construction of Robinson et al. (1991). The initial step for scale construction is locating the items to be included in the questionnaire. The six suggested dimensions of the structured questionnaire were based on previously developed scales that were adapted to the MNE subsidiary context of this study. Innovativeness, risk-taking and proactiveness were measured based on Miller and Friesen (1982), Khandwalla (1977), and Covin and Covin (1990), respectively. These basic scales have been widely used, albeit occasionally with variations as reported by George and Marino (2011, p. 1004); although these authors noted some difficulties deriving, for example, from possible differing interpretations across cultures. Learning was adapted from Moorman (1995); and networking from Dollinger and Golden (1992) and Schmid and Schurig (2003). Autonomy was drawn from Ghoshal and Bartlett (1988) and O'Donnell (2000).

Initially a pool of thirty items based on the aforementioned scales was generated. The items were of forced-choice type, with pairs of statements representing the opposite ends of a continuum. A five-point Likert scale divided the two statements (1 = not at all, 5 = very much). We were concerned how understandable, readable, and clear the items of this set of scales were. Hence, the questionnaire was pretested by four academics in order to check its comprehensibility before the launch of the survey. At the end of this process, an improved 30-item scale was generated. Subsequently, the questionnaire was evaluated for its content adequacy through a judge panel method consisting of three subsidiary managers and three academics (cf. Schriesheim et al., 1993). Only items with a content validity ratio above 0.40 were selected, which is a figure above the minimum value recommended by Lawshe (1975). This generated a revised 28-item for subsidiary entrepreneurial competencies, containing two to six items for each dimension. The revised content validity index of 0.77 for the whole set of scales is deemed to be very satisfactory.

This set of scales was further tested in the form of a 'rolling test' in line with the procedure described by Brown et al. (2001). The 28-item version was firstly posted to half of the sample (i.e., 885 of 1770) resulting in 145 completed questionnaires. The 28 items were factor analysed to develop reliable indices. The results of this investigation proposed two item deletions. We afterwards posted the refined 26-item version to the remaining 885 firms and collected another 119 questionnaires, which generated the final number of 264 collected questionnaires (out of which four were dropped due to missing values). We did not find any statistically significant differences in relation to size and age of the subsidiary; and, level of entrepreneurial initiative between the two halves of the sample. The final version of the 26 items that constitute the suggested set of scales appears in Table 2.

Statistical methods

The first phase of the research involved conducting an Exploratory Factor Analysis (EFA) and subsequently a Confirmatory Factor Analysis (CFA) on key variables linked to firm-level entrepreneurship in past literature. The aim was to identify distinctive subsidiary entrepreneurial competencies. An EFA using the principal factors method with varimax rotation was used to identify the underlying subsidiary entrepreneurial competencies. The use of an oblique rotation yielded similar results. EFA was implemented since, while the hypothesized subsidiary entrepreneurial competencies were expected to be identified, the lack of extensive empirical support on this set of scales suggested following initially an exploratory approach. This allowed for identification of structure among the data, without posing a priori constraints (Hair et al., 2006). EFA was followed by CFA intended to verify the factor structure of the data set. In the second phase, regression analysis was employed to substantiate that the identified subsidiary competencies were indeed "entrepreneurial" by testing their direct positive effect on subsidiary initiative. In essence, the regression analysis sought to ascertain the predictive validity of the entrepreneurial competencies' MNE subsidiary construct.

Table 2
Results of exploratory factor analysis

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Factor 6 | Factor 7 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Product offerings tend to be innovative and novel (INNOV) | .002 | −.039 | .088 | .220 | .698 | .020 | .030 |
| Many product offerings can be produced/marketed (INNOV) | .086 | .075 | −.001 | .094 | .823 | −.023 | .170 |
| Changes in product offerings can be quite dramatic (INNOV) | .113 | −.084 | .085 | .147 | .791 | .081 | .114 |
| Subsidiary has a strong propensity for high-risk projects (RISK-T) | −.129 | .066 | .013 | .726 | .166 | .064 | .146 |
| Bold, wide-ranging acts are necessary to achieve subsidiary objectives (RISK-T) | .005 | .073 | .022 | .734 | .248 | .135 | .207 |
| Subsidiary typically adopts a bold and aggressive posture to exploit potential opportunities (RISK-T) | .089 | .085 | −.043 | .722 | .141 | .028 | .269 |
| Subsidiary typically initiates actions to which competitors then respond (PROACT) | .143 | −.003 | .064 | .228 | .076 | −.075 | .708 |
| Subsidiary can very often be the first to introduce new product offerings, administrative techniques, operating technologies, etc. (PROACT) | .168 | .040 | .126 | .206 | .298 | .003 | .683 |
| Subsidiary typically adopts a very competitive “beat-the-competitors” posture (PROACT) | .133 | .065 | .046 | .338 | .057 | .096 | .604 |
| Subsidiary continuously collects information about customers and competitors (LEARN) | .724 | .053 | .082 | .030 | .002 | −.008 | .106 |
| Subsidiary shares information effectively with corporate headquarters and peer subsidiaries (LEARN) | .680 | −.105 | −.132 | .027 | −.016 | .344 | −.121 |
| Subsidiary uses all the above information in problem-solving (LEARN) | .831 | .039 | −.079 | .036 | .024 | .142 | .037 |
| Subsidiary integrates info from various sources to assist top management in decision-making (LEARN) | .816 | .019 | .035 | −.043 | .019 | −.065 | .072 |
| Subsidiary has been able to avoid potentially serious mistakes by taking advantage of information (LEARN) | .669 | .086 | .061 | −.054 | .063 | −.106 | .158 |
| Subsidiary has cooperated with corporate HQs in performing its business activities (INTRA MNE NETW) | .140 | .092 | .108 | .037 | .035 | .824 | −.005 |
| Subsidiary has cooperated with peer subsidiaries in the UK or internationally in performing its business activities (INTRA MNE NETW) | .016 | .056 | .069 | .149 | .015 | .784 | .042 |
| Subsidiary has cooperated with its customers in performing its business activities (EXTRA MNE NETW) | .064 | −.025 | .829 | −.063 | −.002 | −.045 | .183 |
| Subsidiary has cooperated with its suppliers and/or distributors in performing its business activities (EXTRA MNE NETW) | .177 | .052 | .669 | .104 | .082 | .114 | .064 |
| Subsidiary has cooperated with academic & research institutions in performing its bus activities (EXTRA MNE NETW) | .063 | −.027 | .738 | .125 | .116 | .064 | −.087 |
| Subsidiary has cooperated with government organizations and/or professional or trade associations in performing its business activities (EXTRA MNE NETW) | .037 | −.070 | .756 | .132 | −.004 | .162 | −.017 |
| Subsidiary has autonomy in expanding the current scope of business activity (e.g., R&D, marketing, manufacturing, etc.) (AUTON) | .110 | .720 | −.032 | .148 | −.029 | −.208 | −.137 |
| Subsidiary has autonomy in formulating the annual budget (AUTON) | −.001 | .681 | −.047 | −.092 | −.126 | .241 | .286 |
| Subsidiary has autonomy in developing a major new product offering (AUTON) | −.017 | .730 | −.173 | −.101 | .075 | .148 | .117 |
| Subsidiary has autonomy in developing a new major process (e.g., administrative, manufacturing, management, etc.) (AUTON) | .064 | .648 | .091 | .279 | −.049 | −.328 | −.282 |
| Subsidiary has autonomy in decisions over employee pay and rewards (AUTON) | .079 | .705 | .050 | .293 | −.040 | .061 | −.059 |
| Subsidiary has autonomy in recruitment and promotion to managerial positions (AUTON) | .006 | .699 | .125 | −.139 | .111 | .205 | .310 |

Results and discussion

Results of EFA

The rotated principal factors solution is shown in Table 2. Using the Kaiser criterion (i.e., eigenvalues >1) and confirming it with the scree test criterion, seven significant factors emerged from the exploratory factor analysis: 1) innovativeness; 2) risk-taking; 3) proactiveness; 4) learning; 5) intra-MNE networking; 6) extra-MNE networking; and 7) autonomy. Therefore, networking in the context of subsidiary entrepreneurial competencies has been disaggregated into two components, which is a finding in line with the respective emphasis in the MNE literature.

Given the sample size, factor loadings above .35 were considered to meet the minimal level for interpretation of structure (Hair et al., 2006). Most factor loadings for the seven identified constructs were close to or above .70, thus were considered to have a well-defined structure. All factors exhibited eigenvalues greater than 1 and all variables demonstrated communalities above .50, hence were identified as showing sufficient explanation. In order to determine the appropriateness of factor analysis, the Bartlett test of sphericity was used, which was statistically significant ($p > .001$). Also, the degree of intercorrelations among the variables and the appropriateness of factor analysis were quantified through the measure of

sampling adequacy, which was well above .70. Good factor stability was also achieved through having a ratio of observations to number of analyzed variables well above 5 (Hair et al., 2006). The Cronbach alphas and item total correlation coefficients to assess the reliability of the indices were also above .70.

Results of CFA

In order to demonstrate the adequacy of the measurement model obtained through CFA, unidimensionality/consistency, reliability and construct validity were investigated. CFA was performed on the model that consisted of all latent variables proposed by the EFA model; i.e., with indicators constrained to load only on their hypothesized underlying factors (Sirdeshmukh et al., 2002).

The results of the measurement model are shown in Table 3. The Normed Chi-Square fit index is 1.91, suggesting a good fit for the measurement model (Kline, 1998; Ullman, 2001). The root mean square error of approximation and comparative fit index values are also considered in the literature as less sensitive to sample size than other fit indices (Fan et al., 1999). In particular, the root mean square error of approximation is 0.059; hence, less than the established benchmark for good fit (Hu and Bentler, 1999). The comparative and incremental fit index values equal 0.92, indicating a good fit for the particular model characteristics; i.e., its large sample (Hair et al., 2006). The standardized root mean square is 0.065; i.e., less than the .08 benchmark (Hu and Bentler, 1999).

Table 4 shows the results of the measurement model test with Cronbach alphas, factor loadings, *t*-values and R^2 values for all indicators. The constructs have good validity, in that their factor loadings (ranging between 0.54 and 0.96) are relatively high and larger than the cut-off point of .50 (Hair et al., 2006); while all *t*-values are significant. All R^2 values are also relatively high, meaning that the variation of these indicators is represented by their constructs. Similarly, good results were obtained when we assessed the replicability of the results of the bootstrap method “internally” by using 100 resamples (Efron, 1979).

Results of regression analysis

The direct effect of the identified subsidiary competencies on entrepreneurial initiative (actual entrepreneurial “output”) was tested. Entrepreneurial initiative ($\alpha = 0.781$) was drawn from Birkinshaw et al. (1988) and Birkinshaw (2000), and the six items employed to operationalize it were the extent (1 = not at all, 5 = very much) to which during the past three years the subsidiary entered (a) new market(s); developed a major new product offering; developed a new technology; developed a new major process (e.g., administrative, manufacturing, management, etc.); restructured the organization, involving creation or elimination of department; and, developed innovative work practices. The seven factors that emerged during the EFA and CFA methods were inputted into the regression model as independent variables. Summated scales were formed through combining the variables loading highly on each factor and using the average score of the variables as a replacement variable. This method was preferred since it provides a means for overcoming to some extent the measurement error, and has the ability to represent the multiple aspects of a concept in a single measure (Hair et al., 2006). Factor scores were not used since they are not easily replicated across studies, as they are based on the factor matrix that is derived separately in each research. Table 5 shows the descriptive statistics and correlation matrix for the variables in the regression.

We took required steps to overcome possible common method variance. To illustrate, we reversed some item anchors in the questionnaire; provided respondents assurance of anonymity during the survey; and, placed the questions of competencies and those of initiatives in different sections of the questionnaire in order to make it difficult for the respondent to link the two variable categories, following suggestions by Podsakoff et al. (2003). Further, in 10% of the firms a second manager completed the questionnaire to establish inter-rater reliability. Harman’s one-factor analysis also suggests that the largest factor could only explain 18% of the variance. In short, these actions provide some assurance that it is unlikely that common method bias is a problem in this research.

In the regression model, the seven subsidiary competencies that were identified through factor analysis were expected to have a direct and positive effect on subsidiary initiative. No control variables were entered into this analysis inasmuch as the objective was to confirm the predictive validity of the identified seven competencies on subsidiary initiative. This practice is in accord with that of other development scale studies (Brown et al., 2001; Dimitratos et al., 2012). The main assumptions of multivariate analysis were further tested, namely, data normality, homoscedasticity and linearity. The results showed that these assumptions hold, and so the data was deemed suitable for the regression analysis.

Table 3
Assessing the measurement model fit

| | |
|--|-------------------------|
| Chi-square | 1333.94 ($p < 0.001$) |
| Degrees of freedom | 696 |
| Normed chi-square (χ^2/df) | 1.91 |
| Root mean square error of approx. (90% conf. interval) | 0.059 (0.054; 0.063) |
| Standardized root mean square residual | 0.065 |
| Comparative fit index | 0.92 |
| Incremental fit index | 0.92 |

Table 4
The measurement model

| | | Factor loading | t-value | R ² value |
|---|--|----------------|---------|----------------------|
| Innovativeness ($\alpha = 0.733$) | Innovativeness of product offerings | 0.56 | 8.86 | 0.32 |
| | Number of new product offerings | 0.76 | 12.44 | 0.58 |
| | Changes in product offerings | 0.75 | 12.28 | 0.57 |
| Risk-taking ($\alpha = 0.765$) | Propensity for risky projects | 0.62 | 10.17 | 0.39 |
| | Extent to which bold actions are undertaken | 0.79 | 13.52 | 0.63 |
| | Adoption of aggressive posture when confronted with uncertainty | 0.75 | 12.61 | 0.56 |
| Proactiveness ($\alpha = 0.725$) | Initiates actions to which competitors respond | 0.65 | 9.78 | 0.44 |
| | Introduces new product offerings before competition | 0.96 | 12.71 | 0.82 |
| | Adopts a competitive posture | 0.63 | 10.59 | 0.42 |
| Learning ($\alpha = 0.810$) | Continuously collects information about customers and competitors | 0.66 | 11.58 | 0.46 |
| | Shares information effectively with corporate headquarters and peer subsidiaries | 0.65 | 11.38 | 0.44 |
| | Uses all the above information in problem solving | 0.68 | 11.99 | 0.55 |
| | Integrates information from various sources to assist top management in decision-making | 0.66 | 11.50 | 0.55 |
| | Has been able to avoid potentially serious mistakes by taking advantage of information | 0.83 | 15.94 | 0.69 |
| | Has cooperated with the corporate headquarters in performing its business activities | 0.91 | 7.81 | 0.82 |
| | Has cooperated with the peer subsidiaries in the UK or internationally in performing its business activities | 0.68 | 7.09 | 0.54 |
| | Has cooperated with its customers in performing its business activities | 0.64 | 10.64 | 0.41 |
| Extra-MNE networking ($\alpha = 0.710$) | Has cooperated with its suppliers and/or distributors in performing its business activities | 0.61 | 10.02 | 0.37 |
| | Has cooperated with academic and research institutions in performing its business activities | 0.83 | 14.61 | 0.69 |
| | Has cooperated with government organizations and/or professional or trade associations in performing its business activities | 0.64 | 10.68 | 0.41 |
| | Expanding the current scope of business activity (e.g., R&D, marketing, manufacturing, etc.) | 0.69 | 11.24 | 0.48 |
| | Formulating the annual budget | 0.54 | 8.47 | 0.29 |
| Autonomy ($\alpha = 0.758$) | Developing a major new product offering | 0.60 | 9.55 | 0.36 |
| | Developing a new major process (e.g., administrative, manufacturing, management, etc.) | 0.65 | 10.38 | 0.42 |
| | Decisions over employee pay and rewards | 0.66 | 10.68 | 0.44 |
| | Recruitment and promotion to managerial positions | 0.62 | 10.09 | 0.38 |

The results of the regression examination are presented in Table 6. The regression model is statistically significant with a high R² adjusted value of 0.382. All competencies have a significant and positive effect on subsidiary entrepreneurial initiative at $p < .001$, $p < .05$ or $p < .01$. These findings attest to the existence of specific “entrepreneurial” competencies at the subsidiary level, which indeed drive subsidiary entrepreneurial initiative. The results of the regression analysis strengthen the validity of the entrepreneurial competencies sets of scales of the MNE subsidiary. To sum up, innovativeness, risk-taking, proactiveness, learning, intra-MNE networking, extra-MNE networking and autonomy stand out as “entrepreneurial MNE subsidiary competencies”. The twenty-six items of Table 2 constitute the suggested set of scales of this construct that has seemingly been missing from the literature in the MNE subsidiary field.

Table 5
Descriptive statistics and correlation matrix

| | Mean | S.D. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|----------------|------|------|--------|--------|--------|--------|--------|--------|--------|-----|
| 1. Innov | 2.92 | .93 | 1 | | | | | | | |
| 2. Risk-taking | 2.72 | .83 | .396** | 1 | | | | | | |
| 3. Proact | 3.34 | .83 | .374** | .448** | 1 | | | | | |
| 4. Learning | 3.63 | .75 | .155* | .066 | .246** | 1 | | | | |
| 5. Intra-Netw | 3.25 | .89 | .092 | .148* | .138* | .221** | 1 | | | |
| 6. Extra-Netw | 2.66 | .90 | .131* | .051 | .175** | .089 | .127* | 1 | | |
| 7. Autonomy | 3.05 | .79 | .003 | .185** | .127* | .096 | .087 | -.015 | 1 | |
| 8. Initiative | 3.17 | .90 | .402** | .404** | .419** | .231** | .216** | .270** | .273** | 1 |

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

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

Table 6
Regression results on entrepreneurial initiative

| Variables | Standardized coefficient (Beta) |
|------------------------------|---------------------------------|
| <i>Independent variables</i> | |
| Innovativeness | .234 (***) |
| Risk-taking | .154 (**) |
| Proactiveness | .180 (**) |
| Learning | .100 (*) |
| Intra-MNE networking | .116 (*) |
| Extra-MNE networking | .190 (***) |
| Autonomy | .251 (***) |

ANOVA F (sig.) 24.795 (***)

R square adjusted = .382.

n = 260.

* < .05 ** < .01 *** < .001 (one-tailed).

Conclusions

It is increasingly acknowledged in the international business literature that subsidiaries can provide critical inputs to the entire multinational system (Holm and Pedersen, 2000; Rugman and Verbeke, 2001; Rugman et al., 2011) through leveraging their own distinctive competencies. Nonetheless, limited work has been done to explore and explain the development of subsidiary competencies in general (Schmid and Schurig, 2003), and subsidiary entrepreneurial competencies in particular (Young and Tavares, 2004; Birkinshaw et al., 2005; Boojihawon et al., 2007). While previous research has essentially examined subsidiary competencies in terms of their relevance to other corporate entities (Schmid and Schurig, 2003), this article identifies and substantiates the existence of distinct *entrepreneurial* competencies from a subsidiary competence-creating perspective, and provides an important set of implications for theory and practice. Future study may investigate to what extent activities of MNE subsidiaries located in other countries, in various sectors and with a wide range of different nationalities of ownership validate the operationalization suggested in this article. In a similar vein, longitudinal research is needed to establish to what extent initiatives may also strengthen entrepreneurial competencies, in turn inducing a further loop of interrelationships between MNE subsidiary competencies and initiatives.

In terms of implications for theory, this article contributes to the literature in the field of MNEs suggesting a 26-item set of scales to accurately measure subsidiary entrepreneurial competencies. By highlighting its multidimensional nature, the set of scales of Table 2 suggests that future research at the subsidiary level needs to examine the identified entrepreneurial competencies in combination to reflect the holistic nature of this operationalization. Furthermore, it adds to past research on the constituents of corporate (Covin and Slevin, 1991; Lumpkin and Dess, 1996) and international (McDougall and Oviatt, 2000) entrepreneurship. At the same time, it demonstrates that entrepreneurial competencies may be different in MNE subsidiaries versus independent firms, in that they encompass the MNE-related aspects of intra-MNE networking, autonomy, and subsidiary-specific contextualization of learning (cf. Dimitratos et al., 2012).

Apart from the well-established dimensions of innovativeness, risk-taking and proactiveness, learning is identified as a key competence at the subsidiary level directly linked to entrepreneurial initiative. The subsidiary's ability to exploit locally generated knowledge does not only constitute a source of MNE advantage, as espoused in many studies (Rugman and Verbeke, 2001; Ambos et al., 2006), but also a subsidiary-specific advantage. Subsidiary learning largely increases entrepreneurial initiative. Subsidiary networking was further established as a dominant driver of entrepreneurial initiative. Subsidiaries facilitating the development of both intra-MNE and extra-MNE networks exhibit increased levels of entrepreneurial initiative (cf. Birkinshaw et al., 2005). Therefore, this article establishes the importance of both corporate and local embeddedness as the basis of key subsidiary-specific competencies that drive entrepreneurial initiative. Subsidiary autonomy is identified as a firm-level entrepreneurial competence that may further lead to increased initiative. Although the lack of autonomy has been found to suppress subsidiary entrepreneurial initiative (Birkinshaw et al. 1998; Birkinshaw, 1999), the identification of autonomy as an entrepreneurial competence in this study stresses its subsidiary-level initiative-enhancing significance.

In terms of managerial implications, this article emphasizes the importance of building entrepreneurial competencies for subsidiary survival and long-term growth. Enhanced performance by MNE subsidiaries in developed countries such as the UK is a necessity, both to ensure external competitiveness in the global marketplace, and internal competitiveness within the MNE group. Organization-wide actions by subsidiary managers are required to promote the seven entrepreneurial competencies identified.

First, regarding *innovativeness*, programmes to promote idea generation and to build and sustain an innovative mindset among employees are needed. Second, since innovativeness and doing things differently entail *risk taking*, then employees must be encouraged to take chances and implement their ideas, with management recognizing that there will be failures as well as successes. Third, *proactiveness* means identifying market opportunities faster than the competition by being ahead in understanding and interpreting market, industry and technological signals and developments. *Learning* is a critical fourth competence, notably ensuring that knowledge — especially involving internal and external stakeholders — is formally

identified and shared across the subsidiary. Fifth, effective *networking* entails strong involvement with customers in particular but also other groups external to the subsidiary including suppliers, professional and trade associations, research institutions, academics and consultants, and government organizations.

The last entrepreneurial competence of *autonomy* poses particular challenges for the MNE subsidiary (as compared with private enterprises). Subsidiary autonomy is commonly allocated by the parent MNE. Autonomy may also be gained by the MNE subsidiary by using its entrepreneurial activities and programmes to build greater credibility and reputation within the MNE, and by “internal lobbying” designed to build close relationships with the parent MNE. Recent research (Ambos et al., 2010) has identified a “suppressor effect” on subsidiary autonomy derived from increased parent MNE monitoring as a subsidiary launches new innovations. Still, there are opportunities for organization-wide subsidiary entrepreneurial activities that are operational in nature, and even for structured innovation programmes that may not require parent approval.

The comprehensive set of scales of entrepreneurial competencies developed in this article can be used practically within MNE subsidiaries to aid the implementation of entrepreneurial initiatives. We view subsidiary entrepreneurship as a phenomenon that should be embedded throughout the organization. These scales are particularly appropriate for collecting survey information on entrepreneurial competencies from subsidiary managers at different levels. They can be used to assess the perceptions of network partners (e.g., customers, suppliers, research partners, consultants) towards entrepreneurship in the subsidiary, and even to evaluate the attitudes of the parent and other subsidiaries within the multinational group. They can also provide insights to public policy makers on how they can work with subsidiary managers to launch initiatives that can have beneficial effects in the host country context.

Acknowledgments

The authors gratefully acknowledge the financial support of an Economic and Social Research Council grant (RES-000-22-0621) in the conduct of this research. We also appreciate the constructive feedback of the LRP Guest Editors, the three reviewers and Shameen Prashantham on earlier versions of this article.

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