EFFECTIVE STRATEGY-MAKING IN MULTINATIONAL SUBSIDIARIES

Torben Juul Andersen  
Copenhagen Business School  
Center for Global Strategic Responsiveness  
Department of International Economics and Management  
Pocelænshaven 24A, #3.72  
DK-2000 Frederiksberg  
Denmark  
Email: tja.int@cbs.dk

Ulf Andersson  
School of Business Society and Engineering  
Mälardalen University  
721 23 Västerås  
Sweden  
Email: ulf.r.andersson@mdh.se

Maximilian Palmié  
School of Management  
University of St. Gallen  
Tellstrasse 2  
9000 St. Gallen  
Switzerland  
Email: maximillian.palmie@unisg.ch

Matthias Keupp  
Department of Military Business Administration  
Military Academy at the Swiss Federal Institute of Technology Zurich  
Switzerland

Date: September 20, 2015
Effective Strategy-making in Multinational Subsidiaries

Abstract

We outline commonalities between studies of subsidiary decentralization and autonomous strategy-making in the international business and strategic management fields. This suggests that corporate headquarters should engage in strategy-making processes that provide a combination of formal direction for global efficiencies and autonomy for effective local responses. Strategic guidance from headquarters frames subsidiary decisions in line with corporate priorities and distributed decision power coupled with informal exchange of information facilitates strategic responses in tune with local market requirements. We identify some important nuances in the integration-responsiveness conundrum supported by an empirical study of 351 multinational subsidiaries. We discuss the implications for multinational strategy practice and suggest future research venues to investigate strategy-making in multinational firms.

Keywords: Central direction, Decentralization, Informal communication, Multinational strategy, Subsidiary autonomy
INTRODUCTION

The basic literatures in international business and strategic management share common elements that have been treated separately in the two research streams over the years. In this paper we identify some distinct commonalities between these intertwined academic fields. We draw on both literatures to outline a strategy-making model for subsidiaries in the multinational corporation (MNC) where autonomy, formal direction, and informal information exchanges create extended subsidiary benefits to improve MNC performance. In the turbulence of global markets the MNC should stay true to its overarching purpose and corporate business model but must the same time be able to adapt to local business conditions and configure corporate resources in ways that maintain a good fit with the environment.

This basic view depicts the dynamic process of adapting to complex environmental conditions (e.g., Teece, Pisano and Shuen, 1997; Teece, 2007) and ongoing adaptations to local market needs (e.g., Doz, Bartlett and Prahalad, 1981; Bartlett and Ghoshal, 1989). Hence, we synthesize complementary logics discerned from the strategic management and international business literatures expressed in a multinational strategy-making model. We test the proposed model on a sample of 351 foreign subsidiaries and find support for the proposed model. In the following we first introduce prevailing perspectives in the two fields, develop hypotheses, and present an empirical study to test them, before discussing the broader implications of the findings.
Strategic management

The conventional approach to strategic management reflects a rational analytical approach (Anthony, 1965; Schendel and Hofer, 1979) where a central planning process assesses the competitive conditions and sets a strategic direction with long-term corporate goals and policies that guide strategic actions. This process arguably constitutes exchange of insights among executives possibly involving various managers to develop a shared understanding about the need for specific corporate actions (Andrews, 1980; Ansoff, 1988). However, it is also argued that a more complete understanding of the complex strategy-making process must embrace both intended (planned) and emergent activities to deal with a changing business environment (Mintzberg, 1978; Mintzberg and Waters, 1985).

A number of case-based studies have demonstrated the significance of strategic emergence where autonomous business ventures can develop into important strategic options (e.g., Burgelman, 1983; 1988; Burgelman and Grove 1996). Other studies show how autonomous decisions become a source of competence development that eventually affects the business opportunities available to the corporation (e.g., Bower, 1982; Noda and Bower, 1996). Hence, a more complete model of corporate strategy-making arguably comprises a mixture of formal planning and autonomous business initiatives taken in various parts of the organization.

Nonaka (1988) describes deductive top-down and inductive bottom-up strategy processes as a fruitful interaction between executive aspirations and managerial initiatives to achieve them. This interactive process relies on the resource committing decisions taken by managers within the organization where open communication is important to discuss emergent opportunities and coordinate responsive actions through mutual adjustments. An evolutionary strategy-making perspective (e.g., Burgelman, 1996) sees lower-level managers
as instigators of strategic initiatives, whereas top-management influences strategy by forming the organizational structure and setting the policies that guide ongoing business initiatives. Other scholars refer to this kind of process as “guided evolution” inspired by their observations in a responsive organization under change (Lovas and Ghoshal, 2000). It is suggested that organizations perform better when they can combine different strategy-making modes, such as, central command and decentralized autonomy (Hart, 1992, Hart and Banbury, 1994). Hence, studies find that firms engaged in rational analytical planning activities with dispersed decision power that allows autonomous strategic responses to be taken outperform their peers across industries (Andersen, 2004; Baum and Wally, 2003). In this context, firms that are able to respond and adapt on an ongoing basis to changing environmental conditions will achieve higher average returns at lower variability (risk) in those returns (Andersen, Denrell and Bettis, 2007; Andersen and Bettis, 2014).

Hence, the ability to adapt effectively to changing conditions seems to require a certain balance between formally induced strategies and autonomous initiatives taken by lower-level managers throughout the organization (Burgelman and Grove, 2007). In case studies of capital allocation in large organizations, Bower and Gilbert (2005) uncover how many resource-committing decisions are delegated to managers with lower-level responsibilities even though capital budgeting is a formally orchestrated exercise. As a consequence, only the largest investment decisions are made by top management whereas many business decisions are taken by managers operating throughout the organization.

In dynamic and complex environments information processing capabilities to monitor environmental developments and coordinate interdependent tasks across different subunits is essential (Galbraith, 1977, 1994). As increasing amounts of information must be handled by the organization, new demands are imposed on the effectiveness of intra-organizational
information and communication exchange systems (Egelhoff, 1982; Tushman and Nadler, 1978). The vertical communication flows are typically part of the formal management control processes reporting structured information to higher executive levels. The horizontal communication flows comprise more unstructured knowledge-based information exchanged laterally between managers in different subunits (Tushman and Nadler, 1978) to set-up interrelated activities across business units through mutual adjustments (Daft, 1982; Huber, 1991).

Contemporary organizations depend on the ability to process intangible resources and specialized knowledge to deal effectively with complex interdependencies across corporate activities that must adapt to the changing competitive conditions (Child and McGrath, 2001). These challenges are easier to handle when the decision power is moved closer to the business units that possess the relevant information and knowledge needed to deal with emergent and sometimes unexpected situations (Daft and Lewin, 1993; Volberda, 1996). Internal communication and information systems can help managers quickly distribute information and make relevant data available across local decision nodes (Brynjolfsson and Mendelson, 1993, Huber, 1990). These communication networks support informal exchange of information and unstructured knowledge about critical conditions to facilitate open discussion and effective coordination of corporate activities.

A number of scholars implicate that effective strategic adaptation somehow combines intended planning activities with emergent autonomous responsive initiatives (e.g., Goll and Rasheed, 1997; Hart and Banbury, 1994; Mintzberg and Waters, 1985). This perspective is accentuated further among firms that operate in complex business settings where activities for example are dispersed across a multitude of national market environments. Here elements of the organization structure, business policies, and management control systems interact and
influence how corporate strategy-making processes are conducted, which in turn affects how
the organization identifies changes in the environment and responds to them. Many
environmental changes happen around local business units that both observe the subtle
changes as well as they are in a better position to suggest solutions to deal with those
changes. This is particularly the case in multinational settings where the corporation is
exposed to a diversity of national market conditions where the local subsidiaries are first to
see what is going on.

Multinational strategy-making

The traditional international business (IB) theories have looked at headquarter-based firm-
specific advantages as drivers of multinational business expansion (Dunning, 1979; Vernon,
1971). In this perspective the local subsidiaries of the multinational corporation (MNC) are
considered transmission mechanisms of inherent corporate capabilities that achieve superior
performance in overseas markets with little need for aberrations to local conditions.
Subsequent discussions introduced the tensions between global efficiencies and adaptation to
local market needs as a central theme in multinational strategy (Prahalad and Doz, 1987).
This framed the issues that first and foremost revolved around the structuring of
multinational activities and whether they should be organized in accordance with Global,
International, Multi-domestic, or Transnational strategy typologies (Bartlett and Ghoshal,
1989). This line of thinking was concerned with the balance between global integration and
local responsiveness in international business endeavors with the aim of achieving
simultaneous economic efficiency and strategic effectiveness effects.

In highly complex global environments, this can be achieved through an approach
where local managers use their own contacts and alliances to handle ongoing problems as
opposed to a central approach coordinated through headquarters (Doz, Bartlett and Prahalad,
This perspective conceives of the possibility that multinational competitive advantage can be achieved by combining an efficient global structure with the ability to adapt offerings to local market needs supported by informal communication among contacts in self-established networks of collaborators.

Another approach focuses on the multinational innovation potential driven by diversity in market knowledge, insights and capabilities associated with a presence in different national market settings. Gupta and Govindarajan (1991) developed a multinational strategy theory based on the in- and out-going knowledge flows from the local subsidiaries. The underlying idea here is that multinational presence gives access to diverse resources, knowledge and revenue streams that can contribute to new business development (e.g., Contractor, Kundu and Hsu, 2003; Doukas and Kan, 2006; Govindarajan and Gupta, 2001). Current research finds that the ability to exploit multinational opportunities are industry-specific and depends on the relative emphasis on knowledge-based and capital-intensive business activities (Andersen, 2012). Hence, the MNC should take advantage of dispersed knowledge-based resources while organizing the necessary capital-intensive activities in efficient but flexible and resilient structures that can accommodate local market changes.

The conceptualization of the MNC as an intra-organizational business network (Ghoshal and Bartlett, 2005; Hedlund, 1986) has pinpointed the important role of overseas subsidiaries that can act in their own right. This has inspired a new stream of literature focused on the strategic importance of subsidiary initiatives defined as “entrepreneurial activities carried out by foreign subsidiaries of multinational corporations” (Birkinshaw and Ridderstråle, 1999: 14). This research analyzes how subsidiaries can develop important capabilities from external networks (Andersson, et al., 2001, 2002; Andersson et al., 2005, 2007; Bouquet and Birkinshaw, 2008), engage in reverse knowledge transfer (Najafi-Tavani,
et al., 2013) and thereby influence the MNC’s overarching strategy by taking initiatives (Ambos et al. 2010).

This literature directly or indirectly considers the effects of subsidiary autonomy, whether granted voluntarily by the parent (MNC) for strategic reasons or is obtained from the parent (MNC) due to dependencies on unique subsidiary knowledge and capabilities. The overseas subsidiaries can gain influence and power within the MNC thereby abandoning the initial roles ascribed to them by the headquarters (Dörrenbacher and Gammelgaard, 2006, 2010; Gammelgaard, 2009). Hence, multinational subsidiaries can form idiosyncratic strategy-making processes adapted to the particular requirements of local market conditions, which in turn may provide the basis for strategic initiatives responding to emerging threats and opportunities that arise out of changes in local business conditions.

MODEL DEVELOPMENT

In a multinational strategy conceived as a sequence of resource committing decisions made across hierarchical levels, functional entities, and geographic locations, the decision structure has a direct bearing on the strategy-making process (Bower, 1982, 2005, Mintzberg, 1983, 1994). Similarly, the communication and information processing systems influence the ability to inform dispersed decision-makers through formal policy reporting and by facilitating informal exchange of information across management levels, functional areas, and geographical locations (Galbraith, 1994; Huber, 1990; Simons, 1996, 2000).

In this context we can identify two different forms of autonomy. First one where the decision influences the general direction of and the choice of which business projects to pursue that have a direct bearing on the profile of the subsidiary’s assigned activities (strategic autonomy). Second one where the freedom to decide on and manage staff and
human resources help the subsidiary perform better operationally with respect to centrally assigned as well as self-determined activities in view of local market conditions (operational autonomy). Hence, we define *operational autonomy* as decision authority given to local subsidiary managers on the hiring, firing, and training of local staff and subsidiary involvement in local cooperative business arrangements. Maintaining decision rights at the subsidiary level over issues like “hiring and firing of staff” and “training programs” are important for the way the subsidiary executes major business projects, engages (human) resources, and develops knowledge-based competencies that affect the ability to engage in future projects (Bower and Gilbert, 2007; Noda and Bower, 1996). Autonomy to manage staff and human resources in general should have a positive effect on performance as decisions are made closer to the actual activity affected and where more relevant information is available. This is true particularly for downstream activities that build on external relations in culturally diverse business environments. Hence, autonomy to engage in local business cooperation will increase the subsidiaries’ possibilities to act on opportunities arising in the immediate environment (country markets) and will have a positive influence on subsidiary performance (Andersson, et al. 2002).

We define *strategic autonomy* as the decision authority provided to local subsidiary managers with respect to setting the overall direction of business activities, new projects to pursue, and setting the related budgeting targets. Hence, it provides freedom to pursue a local strategy formed by important initiatives taken in the subsidiary as decision power is dispersed to local managers empowered to make resource committing decisions for own strategic projects and applying the needed resources towards those ends. Delegating decision power on matters like “overall direction of subsidiary” and “new business projects” indicates that decisions can be made by management in the local subsidiary that have a direct influence on the realized strategy. Decisions with respect to subsidiary direction and business projects
can change the role of the subsidiary through its own decisions and thereby *increase the charter* of the subsidiary’s original assignment (Birkinshaw and Hood, 1998). As is evident from the extant literature, local autonomy is important for the ability to respond effectively to changes in local market conditions and gaining efficient coordination of activities through mutual adjustment across self-established networks of collaborative partnerships (Doz, Bartlett and Prahalad, 1981; Bartlett and Ghoshal, 1989).

We define *subsidiary R&D mandate* as a reflection of the intended R&D strategy imposed by corporate headquarters where top management has developed a specific role for R&D efforts within the corporate mission in line with the overarching strategic direction of the corporation communicated throughout the multinational organization. This formal mandate is measured by a dichotomous variable originally developed by Birkinshaw at al. (1998) indicating whether the subsidiary undertakes its R&D activities based on a mandate given by corporate headquarters or not (coded ‘1’ if the subsidiary undertakes R&D activity on behalf of the corporation and otherwise coded ‘0’). The strategic direction from headquarters provides general guidance to ongoing subsidiary activities and business project execution, which means that local managers have general policy direction to base their decisions on as they deal with changing conditions in the local markets and engage in fast responses to local challenges. It also ensures that local choices are held within the overarching purpose of the corporation, so the subsidiary takes initiatives and engages in responsive R&D projects commensurate with the general strategy of the MNC. This should support local responses that adapt to specific market needs as well as ensure alignment of activities around the corporate purpose thereby enhancing the autonomy devoted to the local subsidiaries.
We define *informal exchange relationships* as the ability of managers within and across multinational subsidiaries to build their own social interfaces for open communication and knowledge exchange. It is measured by a multi-item scale where the items indicate the extent to which local managers visit other subsidiaries and engage in joint sessions and business meetings with other subsidiary managers. Hence, it reflects informal personal contacts between subsidiary managers in local MNC units and direct social interaction among managers in MNC units where local knowledge and insights are freely exchanged. The ability to engage in open exchange of information and knowledge provides the means to develop better solutions to emergent strategic issues by incorporating the expertise and insights of many collaborators. Open knowledge exchanges possibly driven by personal contacts and networks may facilitate positive innovation and opportunity seeking behaviors. Furthermore, the ability to informally communicate with various actors both inside and outside the MNC may help facilitate better adaptation of solutions to external market needs as well as more effectively coordinate interdependent activities through mutual adjustments among the involved parties. Altogether these implied mechanisms should enforce the positive performance effects associated with the autonomy devoted to the local subsidiaries.

Since subsidiary business activities can be interlinked across autonomous subsidiary initiatives where local projects may have positive spill-over affects that influence the aggregated MNC performance, we decided to use *subsidiary contribution to MNC performance* as the dependent variable. MNC subsidiary performance is measured by a multi-item scale assessing the extent to which the individual subsidiary has influenced outcomes, value creation, technology development and task effectiveness in other MNC subsidiaries.
We consider the simultaneous outcomes of the operational and strategic autonomy of subsidiaries, central strategic direction, and informal exchange of information in the context of MNCs operating across multiple overseas markets. This underlying argumentation is expressed in a number of hypotheses listed below.

**H1a:** The operational autonomy of the subsidiary where local managers in the subsidiary can apply needed human resources and engage in cooperative arrangements is associated with higher subsidiary contribution to MNC performance.

**H1b:** The strategic autonomy of the subsidiary where local managers in the subsidiary can take independent decisions on business initiatives and their internal controls is associated with lower subsidiary contribution to MNC performance.

**H2:** Multinational subsidiaries with a mandate to pursue R&D for the MNC imposed by the corporate headquarters are associated with higher subsidiary contribution to MNC performance.

**H3:** Multinational subsidiaries with a high level of informal exchange relationships are associated with higher subsidiary contribution to MNC performance.

**H4a:** Multinational subsidiaries with a mandate to pursue R&D for the MNC imposed by the corporate headquarters display a significantly higher positive subsidiary contribution to MNC performance under a high level of operational autonomy.

**H4b:** Multinational subsidiaries with a mandate to pursue R&D for the MNC imposed by the corporate headquarters display a significantly lower positive subsidiary contribution to MNC performance under a high level of strategic autonomy.
H5a: Multinational subsidiaries with a low level of informal exchange relationships display a significantly higher positive subsidiary contribution to MNC performance under a high level of operational autonomy.

H5b: Multinational subsidiaries with a high level of informal exchange relationships display a significantly higher positive subsidiary contribution to MNC performance under a high level of strategic autonomy.

The implied model relationships are illustrated in Figure 1.

The following section presents an empirical study devised to test the hypothesized model relationships.

Data and Methods

We test these hypotheses on a unique sample of 351 foreign subsidiaries. Our sample covers international subsidiaries of German and Swiss MNCs as well as German and Swiss subsidiaries of MNCs located elsewhere. The sampled subsidiaries engage in innovation and research and development (R&D) activities since these activities reflect a central area of identifying opportunities and developing business options of essential relevance for the dynamic adaptation of MNC business activities in global market contexts. These subsidiaries may perform other value activities in addition to R&D.

We adopted a psychometric measurement approach and collected survey data from individual informants. Several approaches recommended in the measurement literature were used to ensure the reliability and validity of our measures, to rule out single respondent bias.
and to minimize common method variance. All of these methods consistently indicate high levels of reliability and validity and alleviate our concerns over common method variance and single respondent bias.

All variables are located at the subsidiary level, our unit of analysis. The scales and their items we used to build the variables as well as the question to determine the assignment of an international mandate to subsidiaries are replicated in the appendix.

In addition to the variables in the appendix, we employ controls for subsidiary R&D intensity (calculated as the subsidiary’s R&D expenses relative to its budget), subsidiary size (the logged number of employees), subsidiary age, subsidiary location, and industry affiliation (based on the NACE classification).

**Results**

Since the dependent variable is conditioned on values between 1 and 7, we estimated Tobit regression models to test our hypotheses (Greene 2003). We specified these models to report robust (Huber-White) standard errors to correct for potential heteroscedasticity. The models were constructed incrementally by first entering only the controls in a baseline model, adding the covariates of the main effects subsequently, and the interaction effects in a final step. Akaike information criteria (AIC) indicate that the full model which includes all controls, independent variables, and interaction terms fits the data best. It provides empirical support to seven of our eight hypotheses: H1a and H1b are supported at p < 0.05; H2 at p < 0.10; H3 at p < 0.001; H4a at p < 0.10; H5a at p < 0.05; and H5b at p < 0.05. Only H4b does not receive support.
DISCUSSION AND CONCLUSIONS

The current study finds empirical support for the theoretical claims about a dual emphasis on central directions from headquarters by providing a formal mandate to the subsidiary and simultaneously delegating operational and strategic autonomy to the subsidiary management. The analyses find a significant positive performance effect of operational autonomy, which is enhanced by a formal mandate from headquarters. In contrast to empirical studies on strategic management processes, we find a significant negative (not positive) direct relationship between subsidiary strategic autonomy and performance but find a positive interaction effect to informal exchange relationships. Hence, strategic autonomy can have a positive performance effect provided that subsidiary managers engage in open informal communication among themselves to mutually coordinate new innovative research initiatives. Both a formal mandate from headquarters and informal exchange relationships between subsidiary managers show positive direct effects on performance.

The empirical evidence based on subsidiary strategy processes on knowledge intensive R&D activities identify some similarities between the extant literatures on strategic management and international business but also uncover interesting nuances that require further scrutiny. These differences may relate to the fact that innovation and R&D are not directly generalizable to other multinational functions, e.g., in operations, sales and marketing, which could be an area for future research. However, the current findings do have immediate implications for policies to create ambidextrous multinational capabilities to ensure global efficiencies and local responsiveness for ongoing value creation within the multinational enterprise.
Table 1. Robust Tobit Estimates\textsuperscript{a}

(Dependent variable: Subsidiary contribution to MNC performance)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational autonomy</td>
<td>0.13*</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Strategic autonomy</td>
<td>-0.16*</td>
<td>(0.07)</td>
</tr>
<tr>
<td>Subsidiary R&amp;D mandate</td>
<td>0.27†</td>
<td>(0.15)</td>
</tr>
<tr>
<td>Informal exchange relationships</td>
<td>0.52***</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Operational autonomy x subsidiary R&amp;D mandate</td>
<td>0.25†</td>
<td>(0.14)</td>
</tr>
<tr>
<td>Strategic autonomy x subsidiary R&amp;D mandate</td>
<td>0.07</td>
<td>(0.13)</td>
</tr>
<tr>
<td>Operational autonomy x informal exchange rel.</td>
<td>-0.08*</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Strategic autonomy x informal exchange rel.</td>
<td>0.10*</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Observability of knowledge</td>
<td>0.13*</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Codifiability of knowledge</td>
<td>-0.09</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Subsidiary R&amp;D intensity</td>
<td>0.01**</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Size</td>
<td>0.13**</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Age</td>
<td>0.00</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Country dummies</td>
<td>included</td>
<td></td>
</tr>
<tr>
<td>Industry dummies</td>
<td>included</td>
<td></td>
</tr>
<tr>
<td>Log-pseudolikelihood</td>
<td>-426.42</td>
<td></td>
</tr>
<tr>
<td>McFadden's Pseudo R\textsuperscript{2}</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>F statistic (d. f.)</td>
<td>9.98***</td>
<td>(32; 259)</td>
</tr>
<tr>
<td>Number of observations\textsuperscript{b}</td>
<td>291</td>
<td></td>
</tr>
</tbody>
</table>

Notes: a. † p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001 (two-tailed test).

b. The model uses less than 351 observations since we instructed the statistical software to do listwise deletion on cases where information regarding one or more model variables is missing.
Figure 1. A Model of Effective Strategy-Making in Multinational Subsidiaries*

*Supported model relationships are indicated in bold (N = 351; see the section “Results”).
REFERENCES


APPENDIX

KEY CONSTRUCTS FROM SURVEY

Subsidiary contribution to MNC performance. To which extent does the following apply? ‘1’ means ‘not at all’, ‘7’ ‘to a great extent’: (MSP1) Activities of our subsidiary influence the outcomes of other subsidiaries; (MSP2) Technology developed by our subsidiary helped to save R&D expenditures in other subsidiaries; (MSP3) To enable them to perform their tasks effectively, we have to provide inputs to other subsidiaries; (MSP4) By transferring technology developed by our subsidiary we have created value in other subsidiaries.

Operational autonomy. Who makes the decisions regarding the following points? ‘1’ means ‘parent alone decides’ and ‘7’ ‘subsidiary alone decides’: (OPAUT1) Hiring and firing senior staff; (OPAUT2) Cooperation with other subsidiaries in the firm; (OPAUT3) Training programs for subsidiary staff.

Strategic autonomy. Who makes the decisions regarding the following points? ‘1’ means ‘parent alone decides’ and ‘7’ ‘subsidiary alone decides’: (STAUT1) Subsidiary budget; (STAUT2) Overall direction of the subsidiary’s activities; (STAUT3) Which new projects to pursue.

Subsidiary R&D mandate. A dichotomous indicator originally developed by Birkinshaw et al. (1998). We asked respondents whether the subsidiary is mandated by the headquarters to undertake any R&D activity on behalf of the multinational corporation as a whole. This indicator was coded “1” if the subsidiary received a mandate from the parent firm, and “0” otherwise.

Informal exchange relationship. How often does the following occur in your subsidiary? ‘1’ means ‘never’ and ‘7’ ‘very often’: (INFEX1) Our subsidiary managers visit other subsidiaries; (INFEX2) We have joint job training activities with staff from other subsidiaries; (INFEX3) Our meetings are attended by managers from other subsidiaries.