

Coordination of Foreign Subsidiaries – A Configurational Perspective

ABSTRACT

This study seeks to investigate patterns of coordination of foreign subsidiaries. We follow the assumption that MNCs adapt the use of coordination mechanisms to the specific subsidiary, leading to substantial heterogeneity. Assuming that coordination mechanisms are strongly interdependent and planned holistically, a configurational approach is applied to identify specific patterns of coordination mechanisms.

Five typical patterns are found and contingencies for those patterns investigated. We demonstrate that the MNC strategy, the sector (services versus manufacturing) and the subsidiary role are associated with to the coordination pattern that the MNC applies to coordinate a specific subsidiary. Our findings also show a joint influence of the subsidiary role and the coordination pattern on subsidiary performance, i.e. the right combination of a subsidiary role with a coordination pattern is crucial for its success.

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INTRODUCTION

Coordination is a key aspect of the design of the HQ-subsiary relationships in a Multinational Corporation (MNC). In general, whenever a task of an organization is carried out by different parts of the organization, the need for coordination (or “control” which is usually used as a synonymous term) arises (Lawrence & Lorsch, 1967). In this case, it is necessary to regulate the different activities within the organization to ensure that they are in accord with the expectations of the organization (Child, 1972). In international business, coordination is crucial for a MNC to integrate the activities that are dispersed across different countries (Martinez & Jarillo, 1991). Since it poses a strategic challenge for MNCs, the coordination of foreign subsidiaries has long been one of the most relevant research topics in international management (Martinez & Jarillo, 1989; Young & Tavares, 2004).

While early studies mainly build on the assumption that a MNC coordinates all subsidiaries in a uniform way, most recent studies take the perspective of MNCs as differentiated networks with heterogeneous subsidiaries. “Variations within such MNCs can be as great as variations across them” (Nohria & Ghoshal, 1997, p. 12). As a consequence, it is not adequate to coordinate these heterogeneous subsidiaries in a standardized manner. With the catchy headline “Horses for Courses”, Ghoshal & Nohria (1993) emphasized that coordination should be adapted to the specific circumstances of a subsidiary.

Coordination is realized via different mechanisms. A mechanism of coordination has been defined to be “any administrative tool for achieving integration among different units within an organization, i.e. to align a number of dispersed and yet interdependent international activities” (Martinez & Jarillo, 1989, p. 490). Considering previous research on coordination, most studies looked into different coordination mechanisms more or less in isolation. Frequently, studies focused on single coordination mechanisms. The most investigated mechanism is centralization (Young & Tavares, 2004). Only rarely studies looked at a comprehensive range of coordination mechanisms (Harzing & Sorge, 2002) but in these cases they often treated the mechanisms to be varying rather independent of each other (e.g. Martinez & Jarillo, 1991).

While it has been mentioned in literature that there might be *patterns* of coordination (e.g. Egelhoff, 1984), we are not aware of any truly comprehensive configurational study with regard to coordination. In the configurational approach, it is emphasized that the *gestalt* of an organization has a stronger influence on its efficiency than each single element of a configuration (Khandwalla, 1973). Birkinshaw and Morrison (1995) demonstrated in their study that their findings offer some support for a configurational approach towards HQ-subsidary relationship studies. Thus, it implies looking into specific *combinations* of elements, in this case into specific combinations of coordination instruments. The existence of specific patterns of coordination can be argued since certain configurations of organizational variables may be “tight constellations of mutually supportive elements” (Miller, 1986, p. 236).

The usage of specific coordination instruments has been shown to vary with the context of the organization, e.g. with the internationalization strategy (Bartlett & Ghoshal, 1989; Harzing, 2000) or with the concrete role of the subsidiary (Martinez & Jarillo, 1991; Birkinshaw & Morrison, 1995). Following the contingency approach and the more complex configurational approach, we expect certain patterns of coordination to be also closely aligned with the organizational context. Considering coordination as a part of the company structure (Mintzberg, 1979), one can consider such an analysis as being part of the structure-strategy research stream (Harzing & Sorge, 2002) in which the fit between components of the strategy and certain structural variables is investigated (Birkinshaw, 2001).

The main research questions in this paper are whether and, if, which distinct patterns of coordination exist, whether they lead to differences in subsidiary performance and in which situation which coordination pattern is applied. Following the general shift of emphasis in international business (IB) research towards the foreign subsidiary as a unit of analysis (Birkinshaw & Morrison, 1995), our study is positioned on the level of the subsidiary, assuming that MNCs adapt their coordination efforts to the specific context of a foreign subsidiary.

To investigate our research questions, the remainder of the paper is structured as follows: First, a number of mechanisms that can be applied for coordination are shortly introduced, followed by a more detailed consideration of the configurational approach. Then, propositions are developed regarding the

existence of patterns, performance effects and contingencies. Then, after a short description of the sample and the methodology, explorative empirical results are presented. Since *ex ante*, the patterns of coordination are not yet defined, we cannot postulate hypotheses regarding the patterns. This gives the study an explorative character. However, certain theoretical considerations regarding the relationship between specific mechanisms of coordination and specific context variables will be discussed.

COORDINATION MECHANISMS

Coordination mechanisms are administrative tools for achieving integration among different units within a MNC. They are used to ensure that all subsidiaries strive towards common organizational goals (Martinez & Jarillo, 1991). Some studies consider three mechanisms – centralization, formalization/standardization and normative integration – to represent the comprehensive range of coordination mechanisms quite well (Bartlett & Ghoshal, 1989; Ghoshal & Nohria, 1993; Nohria & Ghoshal, 1997). A few other authors use a more complex set of coordination mechanism in their studies (e.g. Martinez & Jarillo, 1991; Harzing & Sorge, 2002). Coordination mechanisms that are frequently considered in IB literature can be shortly characterized as follows:

Centralisation refers to the locus of decision power. Regarding MNCs, it determines the degree to which decision-making authority is concentrated in the HQ or given to the level of the subsidiary (Morrison & Roth, 1993). Studies in the area of coordination frequently regard centralization of decision-making as the main component of HQ-subsidary relationships (Harzing & Sorge, 2002). Since empirical studies often showed that decision-making centralization varies with the field of the decision, more recent studies tend to distinguish between the centralization of strategic decisions and the centralization of operational decisions (Birkinshaw & Morrison, 1995)

Formalization and standardization refer to the extend to which written policies, rules, job descriptions, standard procedures, etc. are established and written down in manuals and other documents, and procedures are established through standard routines. The intention of these bureaucratic mechanisms is to give clear and formal guidelines for the behavior in the subsidiaries (Pugh et al., 1968; Lawrence &

Lorsch, 1967). While conceptually, formalization and standardization could be seen as two separate mechanisms, the early study by Pugh et al. (1968) demonstrated a strong correlation which was confirmed by Child (1972). Thus, more recent studies combine both aspects into one coordination mechanism (Martinez & Jarillo, 1989).

Planning, another bureaucratic mechanism, includes the periodically repeated establishment of goals and objectives of the HQ towards the subsidiaries. It is a process of ex ante coordination, in which higher ranking objectives of the organization are broken down for lower hierarchies and specified stepwise. It refers to systems and processes like strategic planning, budgeting, establishment of schedules, and goal setting (Martinez & Jarillo, 1989). Closely related to planning is *output control* which refers to the extent to which data on results, e.g. sales, returns, exchanges, and so on, is used to monitor the activities of the subsidiary (Ouchi, 1977; Egelhoff, 1984).

Behavioral control is based on direct, personal surveillance of the subsidiary managers' behavior. It is a type of direct personal coordination with direct supervision and strong vertical communication flows, by frequent visits of HQ managers to the subsidiary or vice versa, personal meetings, etc. (Ouchi, 1977; Martinez & Jarillo, 1989).

Finally, *normative integration* is analysed in many IB studies as an informal and subtle core element of coordination (Edström & Galbraith 1977; Ouchi 1980; Nohria & Ghoshal, 1997). Normative integration (also called socialization) refers to building an organizational culture of known and shared strategic objectives and values by means of training, transfer of managers, career path management, reward systems, etc. This is a mechanism that allows the subsidiaries flexibility in their daily operations without direct HQ command, but ensures that the behavior of the subsidiary is aligned to the common corporate objectives (Martinez & Jarillo, 1989; Birkinshaw & Morrison, 1995).

CONFIGURATIONAL APPROACH

In organizational research, Miller criticized in the early 1980s that organizations are complex entities and that a “partist approach which studies a tightly circumscribed set of linear relationships is inadequate”

(Miller, 1981, p. 2). Macharzina and Engelhard (1991) apply this argument to IB research and argue that much research has followed a partist approach and looked at fragments of the structure of MNCs instead of trying to understand some of the fundamental patterns in which MNCs react to the challenges of their international environment. They demand a holistic approach in which the researcher looks simultaneously at a large number of variables. This demand is rooted in the configurational approach or the *gestalt concept* that argues that the gestalt of an organization is more than the sum of its parts and that the interaction among variables is crucial (Khandwalla, 1973). The complementary fit between different elements of the MNC's structure constrains the set of feasible alternative combinations (Macharzina & Engelhard, 1991) because the integrity of alignment among organizational elements is an important antecedent of its performance (Miller, 1981). Empirical studies have shown that the internal consistency between structural variables is positively related to the efficiency of an organization (Drazin & Van den Ven, 1985, Khandwalla, 1973).

Thus, an analytical decomposition of the elements and an isolated investigation is not sufficient to comprehend the total pattern (Drazin & Van den Ven, 1985). Instead, some tight constellations of mutually supportive elements are superior which leads to the emergence of specific *patterns* (Miller, 1986). Proponents of the configuration approach suggest that only specific combinations of organizational and system variables are viable in the long run since different characteristics are interdependent and influence each other (e.g. Miller, 1981; Miller & Friesen, 1984; Macharzina & Engelhard, 1991). Thus, it is assumed that a relatively small number of *typical configurations* of organizational variables exist that represent the majority of the empirically existing combinations of organizational variables (Miller & Friesen, 1984). These patterns are also called *gestalt* (Miller, 1981) or *archetype* (Macharzina & Engelhard, 1991). First examples of empirically identified configurations were presented by Miller and Friesen (1984). In IB research, configurational studies were presented by different authors (e.g. Roth, Schweiger, & Morrison, 1991; Birkinshaw & Morrison, 1995; Nohria & Ghoshal, 1997).

Methodologically, the configurational approach attempts to identify configurations by aggregating individual variable profiles (e.g. profiles of coordination mechanisms used in one MNC towards one subsidiary). Thus, it reduces the number of patterns by sorting them into groups which are homogeneous

within and distinct to other groups. Frequently, the applied method is cluster analysis (Macharzina & Engelhard, 1991; Drazin & Van den Ven, 1985; Venkatraman, 1989).

PROPOSITIONS

Given the exploratory nature of this study we formulate propositions instead of hypotheses. This indicates a lack of a priori expectations concerning the patterns of coordination mechanisms since those patterns still have to be identified. Before a clear set of configurations has been identified, it would be premature to discuss hypotheses. This does not, however, suggest that relationships between variables, in particular in a bivariate manner, could not be argued. We do this in the following part of the text but it has to be noted that bivariate relationships, e.g. between a strategy variable and a coordination variable, might be less relevant if both are included in patterns, i.e. in bundles of variables.

Given different strengths and weaknesses of the various coordination instruments, foreign subsidiaries are always coordinated by different coordination mechanisms. However, depending on a number of antecedents, any given HQ-subsidiary relationship will be characterized by the use of the different coordination mechanisms to varying degrees (Birkinshaw & Morrison, 1995). As described above, the configurational approach argues that the internal consistency between the organisational variables has a strong influence on the efficiency of the organisation (Khandwalla, 1973). It postulates that a rather low number of typical constellations of organisational variables exist that can represent the majority of all combinations that exist in practice (Miller & Friesen, 1984).

With regard to coordination, this implies that not an isolated use and analysis of each coordination instrument suffices but that the combination of coordination instruments applied is crucial for the efficiency and effectiveness of a MNC. Empirical studies suggest that the use of coordination instruments in international management is planned with a holistic perspective (Roth, Schweiger, & Morrison, 1991; Ghoshal & Nohria, 1993).

However, the concrete relationship between the different coordination mechanisms is discussed controversially in literature. In an early study, Ouchi (1977) found that two different types of coordination,

namely output control and behavioural control can be seen as distinct mechanisms that are not substitutes for each other. Instead, these two types of control tend to be used in different situations which indicates a multifactorial view of coordination in organizations (Egelhoff, 1984). Roth, Schweiger, and Morrison (1991) argue that objectives of the HQ can be implemented in subsidiaries via common values or, *alternatively*, by written regulations. This indicates a substitutive relationship between different coordination mechanisms which is also suggested in other studies (e.g. Hamel & Prahalad, 1983). In contrast to this assumption, other scholars suggest that informal mechanisms are used *in addition* to formal mechanisms. But this would occur only in situations where the coordination requirements exceed the coordination capacity of the formal mechanisms (Ghoshal & Nohria, 1993; Martinez & Jarillo, 1991). This implies a *supplementary* relationship (Edström & Galbraith, 1977; Galbraith & Kazanjian, 1986; Hulbert & Brandt, 1980).

Both assumptions – coordination mechanisms as substitutes or as supplements – imply the existence of specific patterns of coordination instruments. Those might in the simplest case be composed of high levels of formal instruments together with low levels of informal instruments and vice versa (in the case of a substitutive relationship) or of constellations in which high levels of informal instruments appear only in combination with high levels of formal instruments (in the case of a supplementary relationship). But moreover, there might be more specific relations between the different coordination mechanisms that could turn the simultaneous use of certain mechanisms less efficient. For example, centralization and formalization/standardization are frequently expected to reduce the motivation of subsidiary managers and the flexibility of subsidiaries (Nohria & Ghoshal, 1997). Both consequences are inadequate in situations of high environmental complexity. In particular in those situations, normative integration combined with decentralization is seen as a coordination pattern that allows a MNC to react more rapidly to external changes. This is expressed, *inter alia*, in the heterarchy model of MNCs (Hedlund, 1986) or in the description of the transnational organisation (Bartlett & Ghoshal, 1989). To investigate this complexity more thoroughly, the following proposition is put forward:

Proposition 1. There exist distinct patterns of the use of coordination instruments.

The basic assumption of the configurational approach is that the internal consistency between organizational variables is crucial for the effectiveness and efficiency. Consequently, the application of mutually supportive elements of coordination should result in a superior performance of these patterns.

From an economic perspective, at least on the aggregate level, the existence of certain patterns is likely to reflect efficient decisions in competitive environments (Anderson & Gatignon 1986). MNCs and their foreign subsidiaries face competition that will force inefficient practices to be changed or will make subsidiaries that are coordinated by inferior coordination patterns less likely to survive. This efficiency of existing patterns of coordination can be justified no matter whether one assumes a decision maker that is characterized by rationality (even though it might be bounded) (Williamson, 1985) or whether one applies evolutionary theory (Aldrich, 1979; Hannan & Freeman, 1977) where different variations of coordination patterns would emerge for different reasons but less efficient variations would be expected to be eliminated by way of selection, with only the most efficient patterns fit for survival.

Thus, the existence of a pattern already indicates a certain level of success since it is a confirmation of the sustainability of this pattern in a larger number of cases. Thus, we would not expect *per se* to find differences in performance between the different coordination patterns:

Proposition 2. There are – on average – no systematic performance differences between the coordination patterns.

However, while each identified pattern of configuration is likely to be justified by its mere existence, we would also assume that the adequateness is contingent on the context. The interdependence between strategy and structure is one of the cornerstones of strategic management (Chandler, 1962; Lawrence & Lorsch, 1967; Birkinshaw & Morrison 1995; Wolf & Egelhoff, 2001). Considering coordination as a part of the structure of an organization (Mintzberg, 1979), the necessity of an alignment of the usage of coordination mechanisms with elements of the company strategy is evident (Harzing & Sorge, 2002). Thus, we posit a general contingency of coordination and the context which we will specify in the subsequent part of the paper:

Proposition 3. Different coordination patterns fit under specific circumstances.

To specify potential contingencies, we will look into the MNC strategy, the industry sector and the subsidiary role. First of all, since coordination mechanisms can be considered measures of a MNC to implement international strategies (Galbraith & Kazanjian, 1986; Andersson & Forsgren, 1996), they should vary with different MNC strategies (Ghoshal & Nohria, 1993). One of most influential models of MNC strategies is the integration/responsiveness (I/R) framework that has been proposed by Bartlett and Ghoshal (1989). Their well-known typology of MNC strategies builds on those two dimensions and they propose four strategy types: international organizations, multinational organizations, global organizations, and transnational organizations (Bartlett, Ghoshal, & Beamish, 2008). Different authors discuss the association between the four strategy types and the use of coordination instruments by the MNC (e.g. Macharzina, 1993; Harzing, 2000; Bartlett, Ghoshal, & Beamish, 2008). While multinational strategies are expected to be implemented by very low levels of centralization, global strategies are assumed to be linked to a strong use of formal coordination instruments and a low effort towards normative integration. Transnational strategies are considered to be very complex and, thus, they are a challenge for coordination, leading to a more complex set of coordination mechanisms (Martinez & Jarillo, 1989; Bartlett & Ghoshal, 1989; Wolf & Egelhoff, 2001). Most important, this coordination pattern is observed to shift attention towards informal mechanisms (Bartlett & Ghoshal, 1989; Buckley, 1996).

It has to be noted that the I/R framework refers to the corporate level, implying different coordination patterns in MNCs with a different strategy but rather uniformly *within* a MNC. This might contradict the assumption of a differentiated network in which the HQ-subsidiary relationship is adapted specifically to each subsidiary. But even in the I/R framework it is not necessarily the case that all subsidiaries in a MNC will exhibit the same characteristics. The fact that, e.g., a MNC follows a global strategy does not automatically predict the characteristics of a particular subsidiary of that MNC (Jarillo & Martinez, 1990). The general MNC strategy has an obvious influence on the subsidiary, though. Hence, it can be assumed that, e.g., multinationally oriented MNCs have a relatively high percentage of independent subsidiaries with high autonomy to exploit local market opportunities (Harzing, 2000), and most subsidiaries of a MNC with a global strategy will be dependent on the headquarters and merely implement the global strategy. “Active

subsidiaries” (which reflect a transnational strategy) are most frequently found in transnational MNCs (Jarillo & Martinez, 1990; Harzing, 2000; Macharzina, 1993). Thus, *ceteris paribus*, it can be assumed that the subsidiary strategy is nested in the MNC strategy and the I/R strategy type of the MNC is one antecedent of the coordination of its subsidiaries:

Proposition 3a. Different MNC strategies according to the integration/responsiveness framework are linked to different coordination patterns.

The majority of research in IB is directed towards the internationalization of manufacturing companies. Despite the overwhelming relevance of service companies, a lack of empirical studies in IB is often criticized (McLaughlin & Fitzsimmons, 1996; Clark & Rajaratnam, 1999; Coviello & Martin, 1999). One reason for this research deficit is that service MNCs are seen as a rather new phenomenon (Roberts, 1999).

However, most authors assume that international management of service companies differs from that of manufacturing companies. One crucial characteristic of services is the interaction intensity with the customer. Due to this interaction, problems can emerge from cultural distance (Dunning, 1989; McLaughlin & Fitzsimmons, 1996). Furthermore, services frequently have to be adapted to the local market (Erramilli & Rao, 1993). Such a local adaptation is often linked to decision decentralization. Thus, it is recommended that service subsidiaries should be granted a higher degree of autonomy to be able to react flexibly to customer needs. Furthermore, it is suggested that coordination via shared norms and values is more effective (Bowen, Siehl, & Schneider, 1999).

Another service characteristic is the low standardizability of many services and the low evaluability of service quality. Both attributes lead to behavioral uncertainty. Such uncertainty arises since the firm cannot accurately assess its subsidiary’s performance by objective, readily available output measures (Anderson & Gatignon, 1986), leading to the necessity of other coordination mechanisms. Instead of output control (Ouchi, 1977) the coordination via normative integration is more adequate under those circumstances. These examples suggest a link between industry sector and the coordination. The following proposition addresses this influence:

Proposition 3b. The use of coordination instruments differs for service MNCs and manufacturing MNCs.

The previous propositions were on the firm-level, i.e. the proposed antecedents exert the same influence on all subsidiaries of a MNC. However, when accepting the perspective of the MNC as a differentiated network, different subsidiary strategies have to be considered. While early IB research looked at a uniform management of all subsidiaries, the last two decades have brought many studies that indicated that differentiated subsidiary roles require a differentiated coordination and that those MNC are most successful that coordinate their foreign subsidiaries in an adapted way (e.g. Bartlett & Ghoshal, 1989; Martinez & Jarillo, 1991; Ghoshal & Nohria, 1993; Gupta & Govindarajan, 1994).

From this perspective, it is useful to refer to role typologies. This research stream in international business literature focuses on this differentiation of subsidiary roles. While there have been diverse role typologies proposed in literature (see the overview by Schmid, 2004), the basic assumption that different subsidiaries take over different roles is widely acknowledge in IB research (Bartlett & Ghoshal, 1986; Jarillo & Martinez, 1990; Birkinshaw & Morrison, 1995; Harzing & Noorderhaven, 2006).

A number of studies have investigated how the coordination of a foreign subsidiary should vary depending on its specific role (Gupta & Govindarajan, 1991; Jarillo & Martinez, 1990; Roth & Morrison, 1992; Birkinshaw & Morrison, 1995; Nohria & Ghoshal, 1997; Harzing & Noorderhaven, 2006; Andersson & Forsgren, 1996). With regard to the interdependence of the subsidiary with other units of the MNC, it has been demonstrated that operationally interdependent subsidiaries are coordinated more intensively, by a broad set of coordination mechanisms (Andersson & Forsgren, 1996). Birkinshaw and Morrison (1995) argue that “local implementers” whose task is to implement the MNC strategy in the host country without major adaptation (Gupta & Govindarajan, 1991) are coordinated mainly by formal mechanisms because their processes are closely interlinked with those of the HQ. Subsidiaries with a “world mandate” (D’Cruz, 1986) or so called “strategic leaders” (Bartlett & Ghoshal, 1986) having worldwide responsibility for a product line are more likely to be coordinated by high levels of normative integration. In addition, the strategic autonomy of a subsidiary has been shown to vary significantly between different subsidiary role types with the world mandate having the highest strategic autonomy and the local implementer the lowest level of autonomy (Birkinshaw & Morrison 1995). With regard to the role typology by Gupta &

Govindarajan (1991), Harzing and Noorderhaven (2006) assume that knowledge providers should experience a higher level of normative integration than knowledge users. Furthermore, they assume that dependencies created by knowledge inflows can be effectively controlled even without the use of normative integration, and thus, knowledge users could be granted a low level of autonomy.

Since we intend to identify subsidiary roles by means of a configurational approach in our study, the roles are not identified a priori. Thus, we can again not posit precise hypotheses. The only a priori assumption that can be advanced is:

Proposition 3c. Different subsidiary roles are associated with different coordination patterns.

SAMPLE AND METHODOLOGY

Data was collected through a mail and e-mail questionnaire survey of the heads of international operations or of directors of organization of German MNCs. Each respondent was asked to fill in the questionnaire with respect to one specific foreign subsidiary in a specific foreign market.

Participation in the study was sought from 3,500 service companies, whose addresses were provided by a German direct-mailing service provider and 4,000 manufacturing companies who were randomly chosen from a database of the BDI (Federation of German Industry Associations). The selection criteria for the service companies were “service” as sector and “international sales” greater than zero. For the manufacturing companies in the BDI database, it was not known a priori whether the companies had any international activities at all.

788 questionnaires were returned undeliverable (including mostly invalid e-mail addresses), and 1,283 companies informed us (after the initial mailing or after a follow-up phone call), that they do not sustain foreign subsidiaries, either because they did not have any foreign sales or because their foreign sales were carried out by temporarily sending employees to provide a service in a foreign market. 5,429 potential respondents remained. We received 408 questionnaires, of which 175 had to be eliminated for the analysis of the research questions in this paper due to a high rate of missing values.

Thus the following analysis is based on 233 questionnaires. The response rate of 7.7% is low, but not unusual for international studies with high-level executives as respondents (Harzing, 1997). We still thoroughly

investigated the risk of a non-response bias. Following the procedure proposed by Armstrong & Overton (1977), we compared the group of early respondents (first quarter of the sample to answer) with the group of late respondents (last quarter of the sample to answer) on seven different variables by ANOVA. The F-Values did not display any significant differences. Also, we compared responding and non-responding firms from the original sample. Since the only quantifiable information in the original database was the location of the company, we compared the location of responding and non-responding firms on the level of the first digit of the post codes (from 0 to 9, i.e. ten areas in Germany). A Chi²-test did not display any significant differences. Both procedures show no indication of a non-response bias.

The sample contains 124 service MNCs and 109 manufacturing MNCs. The companies were from a diverse field of services, like advertising agencies, consulting companies, software companies, etc., and different manufacturing industries, mainly machine manufacturing and electrical equipment and appliances manufacturing. The location of the 233 subsidiaries was spread over 38 countries on all continents. The most important host countries were USA (12.4% of subsidiaries in the sample), China (11.6%), Western European countries (mainly France, UK, and Switzerland), and Eastern European countries (mainly Poland, Romania, Czech Republic). The MNCs in the sample had sales between 0.3 million EUR and 6.2 bn. EUR (mean: 220 million EUR); the subsidiary size varied from 0.02 to 440 million EUR sales (mean: 24.6 million EUR).

Methodology

Considering the methodology, we mainly applied cluster analysis and contingency analysis based on cross-tabulations. Some studies that take a configurational perspective use another approach. But, for example, Birkinshaw & Morrison (1995, p. 747) do not identify strongly diverging patterns of coordination for different subsidiary roles and conclude that “we have some way to go before a meaningful profile of structural context variables can be assembled”. However, this conclusion might reveal a methodological deficit of their study and of similar studies: The authors started with the identification of subsidiary roles (or, in other studies, with the identification of specific external contexts) and then they investigated whether a role displays a distinct coordination profile. But in the case where more than one coordination pattern is adequate for a certain role, this approach is not able to identify it because it aggregates different patterns. Instead of this method, the

configurational approach suggest to identify clusters of coordination instrument usage and to identify clear coordination patterns. Then, in a second step, those coordination patterns can be investigated regarding their performance or it can be analyzed whether certain coordination configurations are associated with certain contexts or roles, allowing for the existence of more complex relationships.

MEASUREMENT

To measure the variables, we used standard well-established research instruments. A detailed explanation of the measurement scales is displayed in Table A in the appendix.

The measurement of the coordination variables was adopted from previous studies (mainly Martinez & Jarillo, 1991; Nohria & Ghoshal, 1997; Harzing, 1999; Harzing & Noorderhaven, 2006). The reliability of multi-item scales was assessed using Cronbach's α . When reliability was indicated, items were aggregated separately with a principle component analysis (PCA) for each construct.

Following several studies (Roth & Morrison, 1992; Nohria & Ghoshal, 1997; Birkinshaw & Morrison, 1995), we captured centralization by asking respondents to indicate at which level in the organization eight types of decisions were made. We did not divide the item battery a priori in "strategic" and "operational" but carried out a factor analysis which clearly resulted in the two factors "centralization of strategic decisions" (4 items, $\alpha = 0.799$) and "centralization of operative decisions" (4 items, $\alpha = 0.834$). In addition, we measured output control, formalization/standardization, planning, behavior control and normative integration.

To capture performance, we measured the satisfaction of HQ managers concerning three performance measures of their subsidiary: sales, ROI and the overall performance of the subsidiary ($\alpha = 0.844$). While we acknowledge the weaknesses of self-reported measures concerning company performance, we follow other studies in that approach (Brouthers, Brouthers, & Werner, 2000; Nohria & Ghoshal, 1997). Since the respondents in our study are usually responsible for a larger number of subsidiaries and the evaluation of the subsidiary performance is not directly linked to their own performance (since we did not ask the subsidiary management), we consider the bias from this approach to be within acceptable limits.

To capture the MNC strategy with regard to integration and responsiveness, we followed the approach by Harzing (2000) and Leong & Tan (1993). Four statements were used that describe each of the four strategies

based on the characteristics given in the literature. Respondents were asked to state which one describes their MNC strategy best. In addition, three control variables were used, also adapted from Harzing (2000) (e.g. a statement: “In our MNC, subsidiaries frequently act as ‘strategic centers’ for products or processes.”) and ANOVAs were conducted. For all three control variables, significant differences with the expected direction emerged between the four types. With this procedure, we categorized the MNCs in the four MNC strategy types.

Considering the subsidiary roles, we developed our own role typology. Since this is not in the focus of the present paper, we only present our methodological approach shortly. The main points of criticism of existing role typologies are that role dimensions seem to be chosen rather arbitrary and that the focus on only two role dimensions in most typologies is of an over-simplifying nature (Hoffman, 1994; Schmid, 2004).

To overcome this deficit, we built our role typology on a larger number of dimensions, which have been demonstrated to distinguish between different subsidiary strategies. In particular we used the motives for the establishment of the foreign subsidiary (Dunning, 1998), the value-added scope (White & Poynter, 1984), the concrete activities that are carried out in the subsidiary (Jarillo & Martinez, 1990; Morrison & Roth, 1993), the market scope (D’Cruz, 1986, Birkinshaw & Morrison, 1995), the product scope (White & Poynter, 1984), the level of product adaptation to the local market (Harzing, 2000; Gates & Egelhoff, 1986), the product diversification (i.e. the degree to which the subsidiary’s products are different from the parent company’s products) (Nobel & Birkinshaw, 1996), product flows to and from the subsidiary (Andersson & Forsgren, 1994) and knowledge flows to and from the subsidiary (Gupta & Govindarajan, 1994). Since being a “center of excellence” is also a potential role of a subsidiary (Frost, Birkinshaw, & Ensign, 2002) we included this dimension as well. For this variable we assumed that characteristics of a center of excellence are not dichotomous but can be given to a larger or lesser degree (Surlmont, 1996). In all, we used 29 variables to identify different subsidiary roles.

Given that the applied role dimensions partly overlap and are partially intercorrelated which might distort the results of a cluster analysis, we first factor-analyzed the variables, extracting six factors. Using factors also eliminated the problem of different scales of the original variables. Since the factors have only been used as a basis for cluster analysis, we do not display and discuss the factors. Then, the hierarchical Ward procedure with

Euclidian distances was applied and a five-cluster solution was shown to be optimal. We cross-validated our cluster solution by applying other clustering methods. A high level of congruence between the methods emerged. A discriminant analysis with the cluster as dependent variable and the strategy variables as independents confirms the goodness of the cluster solution with a significant Wilks' Lambda and a correct classification of 86.0% of the cases.

The strategy patterns for the five subsidiary roles are displayed in Table B the appendix. The finding that the large number of strategy variables can be reduced into five clusters confirms the basic assumption of the configurational approach that a limited number of patterns (in this case of subsidiary strategy variables) can be used to describe most existing subsidiary roles. The five subsidiary roles can be described as follows:

Cluster 1 consists of sales units that primarily are established for market seeking. They sell products in their host country that they mainly receive from other organizational units of the MNC. Including the other characteristics, this can be considered to be a "marketing satellite" (White & Poynter, 1984).

Subsidiaries in cluster 2 have a high percentage of sales outside of the host country, mainly to the parent company. The value-added scope is very narrow, focussing on production while having low values on sales and marketing. These subsidiaries serve as "production units" for the MNC.

Cluster 3 carries out sales and marketing activities and is established to exploit the host market. These subsidiaries offer the same products as the parent company. While they realize full value added chains, they are very similar to the parent company. Thus, they can be seen as "regional miniature replicas" (D'Cruz, 1986).

In cluster 4, subsidiaries realize nearly full value-added chains for a limited number of products. Their product offer differs from that of the rest of the MNC. Products are only adapted to the host country to a small degree, since those subsidiaries serve the world market. They are tightly integrated in product flows with the MNC. From these and the other characteristics they can be classified as product specialists (White & Poynter, 1984). To distinguish this role from the next role, we label it "global product specialist".

Subsidiaries in cluster 5 are similar to those of cluster 4; however, they are integrated to a lesser degree in the product flows of the MNC. They have multinational traits, e.g. in adapting their products to their host markets. They have a substantial part of their sales outside of their host country but in a rather limited number of

countries. These subsidiaries represent “regional product specialists”, a type of subsidiary that is found much more frequently than the global product specialist.

RESULTS AND DISCUSSION

First analyses of the coordination instruments revealed, as expected, a substantial number of intercorrelations between the different instruments. An aggregation was, thus, possible and viable. One method to aggregate the instruments would be factor analysis. However, all instruments were theoretically and conceptually argued to be distinct (except for standardization and formalization which were aggregated in the measurement process). Thus, a factor analysis should not be applied. Instead, the instruments are aggregated by extracting characteristic patterns of their simultaneous use. In doing so, we group not coordination mechanisms directly but foreign subsidiaries on the basis of the mechanisms that are used by HQ to coordinate them (Macharzina, 1993).

As a first step, ANOVAs were calculated to test whether significant differences in the use of coordination instruments can be identified between service MNCs and manufacturers. While some differences appeared, none of them were significant. Hence, a cluster analysis of coordination instruments can build on the full sample and it was not necessary to extract separate patterns for service MNCs and manufacturing MNCs.

Seven coordination mechanisms (see Table 1) were used to create clusters. In the first step, we specified the number of clusters by looking at the elbow criterion. A four or a five cluster solution appeared to be best fitting the data. Both solutions were compared by applying three different clustering algorithms with the pre-specification of four and of five clusters: hierarchical cluster analysis with ward-algorithm, k-means and the two-step procedure. The created cluster solutions were investigated with discriminant analysis. For all three algorithms, the five cluster solution appeared to be superior.

To identify the five patterns of coordination, the two step cluster analysis method was applied. The resulting clusters are displayed in Figure 1. Based on the patterns, labels were established for each cluster. To describe the patterns in more detail, the mean value of each coordination instrument (standardized, metric variables) as well as ANOVAs are reported in Table 1.

display Figure 1 about here

Cluster 1 is characterised by a relatively high level of almost each coordination instrument. Those subsidiaries are coordinated intensively, by the full set of available coordination mechanisms. It is labelled “broad-intensive control”.

In cluster 2, below average values of centralization and normative integration are accompanied by high values in particular of the bureaucratic mechanisms (“bureaucratic control”).

Subsidiaries in cluster 3 are exposed to only low levels of formalization/standardization and planning; normative integration is also low. These subsidiaries are coordinated by decision centralization, in particular regarding strategic decisions (“moderate centralization”).

The integration of subsidiaries in cluster 4 in the MNC is mainly realized via normative integration; most other mechanisms display rather low values (“normative coordination”).

Cluster 5 is characterized by the lowest level of each coordination mechanism except for the centralization of operational decisions. Even for this variable, values are only average. Thus, these subsidiaries are only experiencing “loose coordination”.

display Table 1 about here

ANOVAs yielded significant differences for each of the variables across the coordination patterns. While this does not necessarily indicate pairwise differences these are not required in the configurational approach since the relevant distinction is between patterns not between single variables. To test the distinction between the patterns, a discriminant analysis was applied to validate the cluster solution. It displayed a Wilks’ Lambda of 0.113, i.e. only 11.3 % of the variance was not explained by the cluster solution. 83.3 % of the cases were classified correctly which further confirms the goodness of the cluster solution. Thus, the analysis supports the proposition that distinct patterns of coordination exist.

Considering the performance of subsidiaries, the investigation does not reveal a significant difference between the five patterns. This is in accordance with *Proposition 2* and while extant literature sometimes implies

superiority of informal instruments (e.g. Martinez & Jarillo, 1989; Bartlett, Ghoshal, & Beamish, 2008), it does so only in a contingency perspective, assuming a certain constellation of environmental factors.

Contingencies

A cross-tabulation was used to investigate the relationship between specific MNC strategies and the applied coordination pattern. Table 2 reports for the coherent bundles of coordination instruments how frequently they are applied by MNCs with a specific strategy.

display Table 2 about here

For the two-way contingency table, the Chi^2 -statistic is calculated to test the independence of the two marginal variables. The highly significant value reveals a large deviation of the observed from the expected frequencies, indicating that there is an overall association between the MNC strategy and the coordination pattern. To investigate specific cells, standardized residuals were investigated. Only a few cells display significant deviations of observed values and expected frequencies.

Table 2 reveals, e.g., that MNC with a global strategy apply a “broad-intensive control” more often than average. However, this association is not significant. In contrast to this, MNCs with a multinational orientation use the pattern “broad-intensive control” less often than average (not on a significant level) and “loose coordination” significantly more often. This is also in accordance with expectations concerning this strategy type. Finally, MNCs with a transnational strategy use the pattern “normative coordination” significantly more frequently than the other MNCs – a relationship that is often argued in literature.

In all, *Proposition 3a* is supported by the data and the coordination patterns are generally found to be contingent on the MNC strategy.

Sector

On the level of the single coordination instruments, there were no significant differences between manufacturing MNCs and service MNCs. Using contingency analysis (see Table 1), a small but significant

association between industry sector and coordination pattern becomes apparent. But for none of the cells, a significant deviation from the random distribution can be shown. Thus, only the overall pattern of the relationship is indicating an association. *Proposition 3b* is supported but only at a very weak level.

Subsidiary Role

Again, a cross-tabulation was used to investigate the relationship between specific subsidiary roles and the applied coordination pattern. Table 3 displays for each subsidiary role how frequently these subsidiaries are coordinated with a specific coordination pattern. For the contingency table, the highly significant Chi^2 of 42.304 ($p=0.000$) indicates that there is a tight association between the subsidiary role and the coordination pattern. This provides support for Proposition 3c.

display Table 3 about here

However, conclusions about the subsidiary roles 2 and 4 must be drawn with great caution since both roles are only found in a few cases. However, since both roles are intensively discussed in literature, we display the results for these types as well.

Production units are most often coordinated by broad-intensive control. Given the low autonomy that is usually predicted for such subsidiaries (Young & Tavares, 2004), this can be seen as a confirmation of this assumption. However, given the low number of production units in the sample, this result should not be considered very robust.

Subsidiaries in the role of regional miniature replicas are more often coordinated by broad-intensive control or moderately centralized. Loose coordination and normative coordination are used less frequent than average. While these differences to a random distribution are not significant, they are plausible for this role as it is described in literature (D'Cruz, 1986; White & Poynter, 1984).

Product specialists are most often integrated via “normative coordination”. While the low number of cases of global product specialists only allows this finding to be interpreted as a first indication of an association the analogous results for the regional product specialist support the assumption that this role is particularly prone to

normative integration. At the same time, the regional product specialist is shown to be significantly less often coordinated by broad-intensive control. As literature has postulated for the “world product mandate” (D’Cruz, 1986; Forsgren & Pedersen, 1997), our study confirms for the regional product specialist that the responsibility for a larger market area is accompanied by relative autonomy. The finding that bureaucratic control is used more frequently for regional product specialists (even though not on a significant level) confirms the considerations by Roth and Morrison (1992) that the interdependence of the product specialist with other organizational units of the MNC requires a certain level of coordination by those instruments.

Marketing satellites are less frequently coordinated by normative coordination but either coordinated moderately centralized or only loosely coordinated. The finding of two strong coordination patterns for this subsidiary role can be explained if there is still rather large intra-heterogeneity within this subsidiary role, concerning variables that have not been used for the cluster analysis. Further investigations of variables that we have measured revealed that those marketing satellites that experience only a loose coordination are on average larger than those marketing satellites that are coordinated by moderate centralization. Thus, a possible explanation for the finding is that resource-rich marketing satellites have the necessary resources for autonomy while smaller marketing satellites need to be coordinated by rather centralized decisions.

To further investigate the relationship between subsidiary roles and coordination patterns, we looked into their isolated and joint effects on the performance of the company. Plotting the combined effect of both variables reveals that the curves (for the five coordination patterns) are not fully parallel to each other, indicating an interaction effect (see Figure 2). The fact that the lines are not horizontal suggests that the subsidiary role has an influence on the performance of the subsidiary with regional product specialists being, on average, more successful than marketing satellites.

display Figure 2 about here

A two-factor ANOVA is calculated to test for an interaction effect of both factors (Table 4). First, we examined the homogeneity of variances. A non-significant Levene test ($p=0.073$) indicates that homogeneity can be assumed.

display Table 4 about here

While the main effect of the coordination pattern is non-significant (as has been demonstrated before), the main effect of the subsidiary role is significant. Thus, different subsidiary roles lead to a different subsidiary performance, an aspect that is not in the focus of this paper and will, thus, not be discussed further. More important, there is a significant interaction effect. Hence, the coordination pattern unfolds an indirect performance effect. Choosing the right coordination pattern for a specific subsidiary role influences performance. Which coordination pattern is adequate for which bundle of subsidiary tasks is revealed in Figure 2. However, the number of cases for this complex investigation is rather low. Thus, while we can confirm a general association between coordination pattern and subsidiary role, the specific results should be considered with great caution.

LIMITATIONS

There are a number of limitations that need to be noted regarding this study. First, the study is of a purely explorative nature. While extant literature provides a great number of theoretical considerations and empirical findings on coordination, these are mainly based on bivariate relationships. Using the configurational approach, our objective was to identify concrete patterns of coordination. But given the lack of prior configurational research, no patterns could be posited a priori. Since we identified the patterns only in this study, specific relationships or contingencies concerning these patterns could not be hypothesized.

Second, the sampling technique and the sample itself limit the value of the conclusions. The measures that were used were perceptual measures and they were captured from the perspective of the HQ, not the subsidiary. We assume, though, that the bias in this case is weaker than the one that would be caused by asking subsidiary managers. HQ managers can compare different subsidiaries and are less closely linked to the performance of a single subsidiary which should lessen the negative impact of this approach. Additionally, we have a single informant in each company, so common method bias is a potential problem. We applied the procedure proposed by Podsakoff and Organ (1986) to investigate this problem. The results of a factor analysis across all perceptual variables results in a factor distribution that indicates that a common method variance is not likely to be a major

concern in this study. In any case, collecting answers from the HQ and the corresponding subsidiary would improve the validity of the measurement.

Finally, we investigated subsidiaries from different MNCs, assuming that the various identified coordination patterns and subsidiary roles exist within the same MNC. But future studies still have to confirm this assumption by investigating different subsidiaries from the same MNC.

CONCLUSIONS

The main conclusion that can be derived from this study is that coordination mechanisms for foreign subsidiaries indeed seem to be planned with a holistic perspective (Roth, Schweiger, & Morrison, 1991). While the association between the different mechanisms can not be expressed in simple positive or negative linear relationships and, thus, the relationship between the instruments is not either supplementary or substitutive, we did demonstrate the existence of tight constellations of instruments, leading to five typical patterns of coordination mechanisms: broad-intensive control, bureaucratic control, moderate centralization, normative coordination and loose coordination. By identifying specific patterns of coordination mechanisms, the study confirmed the assumption that the internal consistency of organizational variables is crucial for its efficiency (Drazin & Van den Ven, 1985) and that only specific configurations of coordination instruments are viable since they consist of mutually supportive elements. Another advantage of this method is that the patterns are also useful for prediction and for simplification of the analysis since – given some characteristics of the coordination – its pattern could be identified and many other characteristics could be inferred (Macharzina & Engelhard, 1991). As a result, we recommend future studies to apply configurational approaches more frequently and to look at holistic patterns of organizational variables.

A further finding is that, as has been expected, there is no difference in the performance of the five different coordination patterns *per se*. However, the context of the subsidiary plays an important role in explaining the application of a specific coordination pattern.

First, the MNC strategy is closely linked to coordination. We demonstrated that, e.g., MNCs with a multinational strategy use loose coordination significantly more often than other MNCs. Transnational MNCs, on the other hand, indeed apply a coordination pattern that is mainly based on normative integration significantly

more frequently than others. Second, we found that service MNCs do overall coordinate their subsidiaries slightly different from MNCs in the manufacturing sector. While this relationship was weak, it was significant and it showed that more insight is needed in the differences between the international management of service companies and of manufacturers.

Finally, we provided exploratory findings on the relationship between the subsidiary role and the coordination pattern. This part of the study can be seen as part of the strategy-structure research stream and supports the shift of focus from the firm-level to the subsidiary level. While other studies have already indicated that different subsidiary roles require different coordination (e.g. Martinez & Jarillo, 1991), the present study offers additional insights. To this end, a new role typology was developed that identified five subsidiary roles which mirror existing subsidiary roles from other typologies quite well. Our study demonstrated not only that different subsidiary roles are associated with different coordination patterns but it also supported the assumption that specific combinations of roles and coordination patterns enhance the performance of the subsidiary.

An important conclusion of this finding is that heterogeneous subsidiaries indeed should be coordinated differently. Based on this finding, we strongly plead for companies to apply a coherent set of coordination mechanisms to coordinate a subsidiary and to ensure that this coordination pattern is aligned to the specific role of the subsidiary.

APPENDIX

Table A
Measurement.

<i>Variable</i>	<i>No. of Items</i>	<i>Source</i>	<i>Remarks</i>
Centralization	8	Roth & Morrison, 1992; Frost, Birkinshaw, & Ensign, 2002; Nohria & Ghoshal, 1997	Expl. Variance: 66.0 %, two factors Centralization Strategy: $\alpha=0.799$, 4 items; Centralization Operational Decisions: $\alpha=0.834$, 4 items
Formalization	2	Adapted from Nohria & Ghoshal, 1997	High intercorrelation of all 4 items, hence, combined in one variable. $\alpha: 0.809$; expl. variance: 64.4%
Standardization	2	Adapted from Harzing, 1999	
Planning	2	Adapted from Martinez & Jarillo, 1991; Harzing, 1999	$\alpha: 0.731$; expl. variance: 78.8%
Normative Integration	2	Adapted from Martinez & Jarillo, 1991; Nohria & Ghoshal, 1997; Harzing, 1999	$\alpha: 0.829$; expl. variance: 85.4%
Behavior Control	2	Ouchi, 1977; Martinez & Jarillo, 1991; Nohria & Ghoshal, 1997; Harzing, 1999	$\alpha: 0.735$; expl. variance: 79.5%
Output Control	2	Ouchi, 1977; Harzing, 1999	$\alpha: 0.695$ expl. variance: 76.8%
Subsidiary Performance	3	Adapted from Brouthers, Brouthers, & Werner, 2000; Nohria & Ghoshal, 1997	$\alpha: 0.844$; expl. variance: 76.5%
MNC Strategy (I/R framework)	1 plus 3 control variables	Leong & Tan, 1993; Harzing, 2000	significant differences between the control variables for the 4 groups
Value-added activities	8	Adapted from Morrison & Roth, 1993; Jarillo & Martinez, 1990	Each activity with 1 (activity carried out) or 0 (activity not carried out)
Value-added scope	8	Adapted from Morrison & Roth, 1993; Jarillo & Martinez, 1990	Index; Sum of all value-added activities (from 1 to 8)
Market Scope	1	Birkinshaw & Morrison, 1995	No. of countries
Foreign Sales of the Subsidiary (to Third Countries)	1		Scale from 1 (0%) to 6 (100%)
Parent Company Customers	1	Adapted from Erramilli, 1991	Percentage of Customers that were before already customer of parent company, scale from 1 (0%) to 6 (100%)
Motives for the Establishment of the Subsidiary	7	Adapted from Dunning, 1998; Martinez & Ricks, 1989; Ferdows, 1989	Each motive used separately; not aggregated, scales from 1 (not relevant) to 7 (very important motive)
International Product Diversification	2	Adapted from Birkinshaw, 1996	$\alpha: 0.834$; expl. variance: 86.1%
Product Scope	1	White & Poynter, 1984	Scale from 1 (only a single product/service) to 7 (numerous products/services)
Local Adaptation	4	Adapted from Harzing, 2000; Gates & Egelhoff, 1986	$\alpha: 0.787$; expl. variance: 61.4%
Center of Excellence	2	Surlemont, 1996	$\alpha: 0.845$; expl. variance: 86.8%
Product Flows	4	Adapted from Andersson & Forsgren, 1994; Harzing, 2000; Nohria & Ghoshal, 1997	Each product flow used separately; not aggregated, scales from 1 (0%) to 6 (100%)
Knowledge Flows	4	Adapted from Gupta & Govindarajan, 1994	Each knowledge flow used separately; not aggregated; scales from 1 (very low extend) to 7 (very substantial extent)

Table B

Strategy patterns of the five subsidiary roles.

<i>Role Label</i>	<i>Mean Values</i>					<i>ANOVA</i>	
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>F</i>	<i>Sign.</i>
	<i>Marketing Satellite</i>	<i>Production Unit</i>	<i>Regional Miniature Replica</i>	<i>Global Product Specialist</i>	<i>Regional Product Specialist</i>		
Market Seeking Motive	6.48	3.53	6.31	5.62	6.55	26.427	0.000
Resource Seeking Motive	1.79	3.18	1.64	4.77	3.76	44.255	0.000
Efficiency Seeking Motive	1.67	6.12	1.64	5.85	4.46	95.544	0.000
Know-how Seeking Motive	2.55	3.53	2.04	4.46	3.77	24.837	0.000
Follow-the-Customer Motive	2.92	3.47	3.47	4.38	3.85	2.290	0.059
Parent Company Customers	2.38	3.33	2.42	3.08	2.52	3.606	0.006
Value-added scope	3.55	2.88	5.61	7.08	7.37	100.338	0.000
Activity: Advertising	0.66	0.13	0.83	0.85	0.92	19.414	0.000
Activity Operations	0.30	1.00	0.59	0.92	0.97	36.915	0.000
Activity Sourcing	0.22	0.69	0.60	1.00	0.94	36.841	0.000
Activity R&D	0.06	0.13	0.23	0.69	0.80	49.752	0.000
Activity Strategic Marketing	0.64	0.00	0.79	0.92	0.91	23.520	0.000
Activity Sales	0.98	0.06	0.98	1.00	1.00	259.059	0.000
Activity HRM	0.47	0.69	0.97	1.00	0.95	36.663	0.000
Activity Raising/Mgt. Of Capital	0.22	0.19	0.60	0.69	0.87	26.998	0.000
Market Scope	3.12	1.80	5.09	55.62	6.68	48.152	0.000
Foreign Sales of Subsidiary	1.73	3.44	2.17	4.31	2.83	17.946	0.000
Product Scope	4.37	5.33	6.07	3.77	5.76	16.138	0.000
Center of Excellence	-0.19	-0.17	-0.29	0.46	0.47	11.134	0.000
Intern. Product Diversification	0.72	-0.15	-0.35	0.56	-0.03	15.874	0.000
Local Adaptation	-0.24	-0.95	-0.20	0.05	0.61	18.971	0.000
Product Flows from HQ	3.16	2.92	4.07	3.83	3.03	7.047	0.000
Product Flows from Peer Subs.	1.32	1.33	1.55	3.46	1.97	12.397	0.000
Product flows to HQ	1.18	3.92	1.44	4.15	2.44	49.474	0.000
Product Flows to Peer Subs.	1.14	1.60	1.16	3.54	1.78	51.371	0.000
Knowledge Flows from HQ	4.34	5.27	5.15	4.08	4.90	3.759	0.005
Knowl. Flows from Peer Subs	1.95	1.87	2.68	3.00	3.24	6.322	0.000
Knowledge Flows to HQ	3.97	3.31	3.98	3.85	4.36	1.649	0.162
Knowledge Flows to Peer Subs.	1.89	1.88	2.51	2.46	3.38	9.775	0.000
n	31	9	82	12	92	233	

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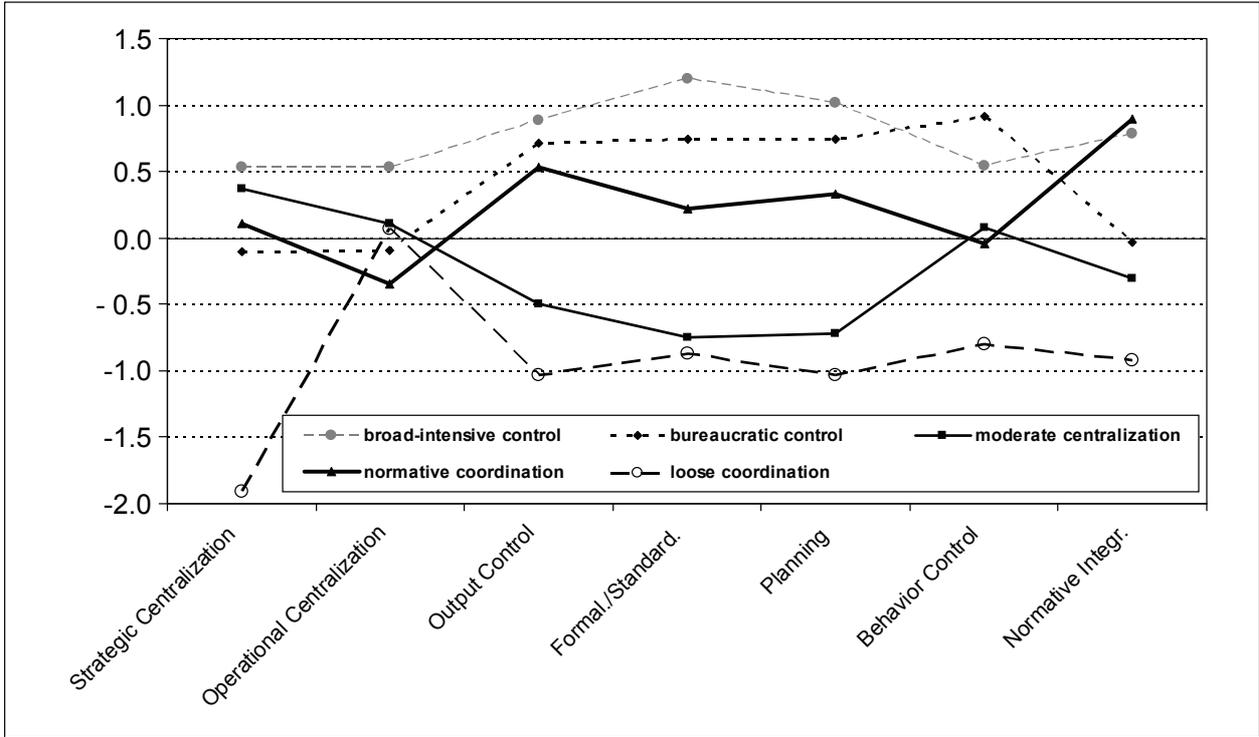
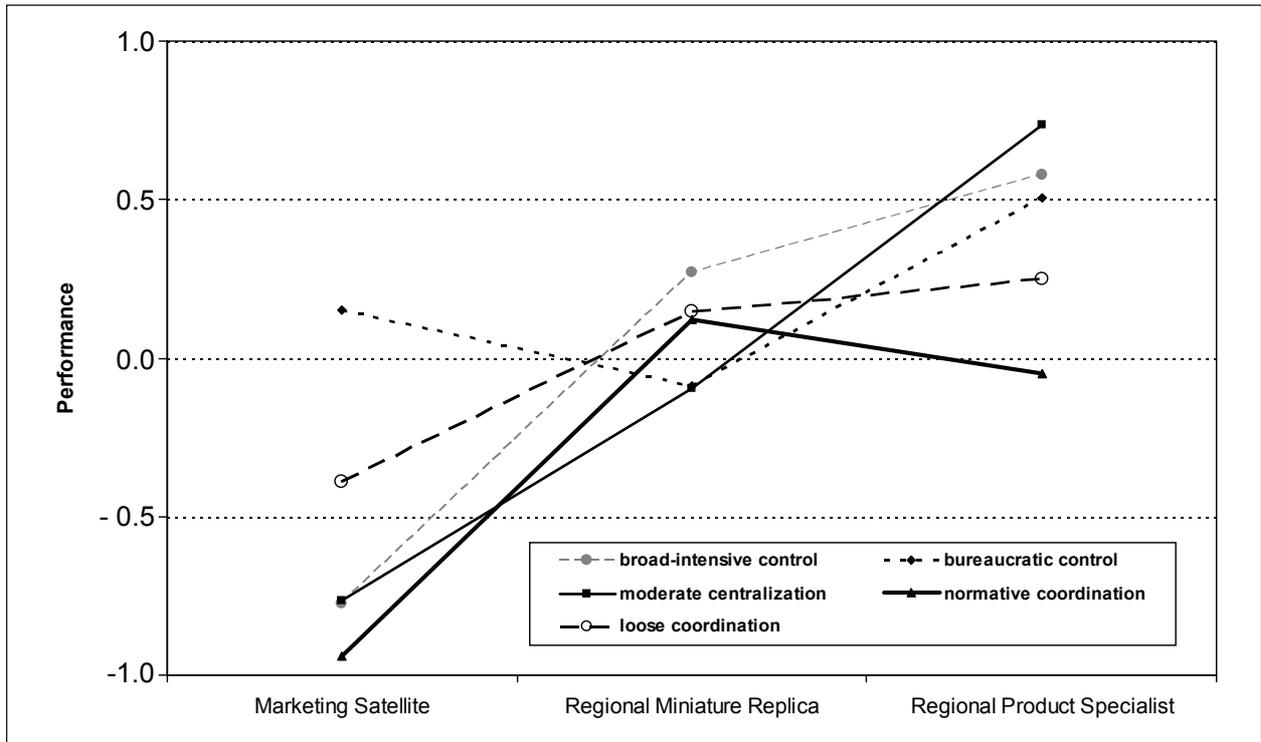


Fig.1. Patterns of coordination.



The plot only contains three subsidiary roles since the two others have very low cell sizes since for each subsidiary role five coordination patterns are distinguished.

Fig. 2. Joint effect of subsidiary role and coordination pattern on subsidiary performance.

Table 1
Analysis of coordination patterns.

<i>n</i> =233	<i>Mean Values</i>					<i>ANOVA</i>	
	<i>1</i> (<i>n</i> =44)	<i>2</i> (<i>n</i> =41)	<i>3</i> (<i>n</i> =64)	<i>4</i> (<i>n</i> =56)	<i>5</i> (<i>n</i> =28)	<i>F</i>	<i>Sign.</i>
Cluster Label	broad intensive control	bureaucratic control	moderate centralization	normative coordination	loose coordination		
Centralization Strategic Decisions	0.530	-0.101	0.374	0.104	-1.911	70.615	0.000
Centralization Operational Decisions	0.527	-0.092	0.155	-0.341	0.067	6.128	0.000
Output Control	0.881	0.715	-0.494	0.532	-1.033	87.131	0.000
Formalization/Standardization	1.194	0.745	-0.745	0.215	-0.874	100.293	0.000
Planning	1.012	0.744	-0.721	0.328	-1.031	102.087	0.000
Behavior Control	0.546	0.911	0.081	-0.041	-0.804	21.945	0.000
Normative Integration	0.785	-0.029	-0.310	0.894	-0.920	47.063	0.000
Performance	0.108	0.297	-0.019	-0.137	0.046	0.984	0.417
Service Companies (<i>n</i> =124)	15.5%	24.3%	33.0%	20.4%	6.8%	100.0%	$\chi^2=11.545$ df=4; p=0.021
Manufacturers (<i>n</i> =109)	21.7%	12.3%	23.6%	26.4%	16.0%	100.0%	

Table 2

Cross-tabulation and contingency analysis of MNC strategy type and coordination pattern.

	<i>MNC Strategy</i>				<i>Sum</i>
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	
<i>n=220</i>	<i>global MNCs (n=30)</i>	<i>multinational MNCs (n=74)</i>	<i>international MNCs (n=82)</i>	<i>transnational MNCs (n=34)</i>	
(1) broad-intensive control (n=42)	30.0%	12.2%	22.0%	17.6%	19.1%
(2) bureaucratic control (n=34)	16.7%	17.6%	12.2%	17.6%	15.5%
(3) moderate centralization (n=62)	16.7%	31.1%	35.4%	14.7%	28.2%
(4) normative coordination (n=54)	26.7%	14.9%	25.6%	41.2%*	24.5%
(5) loose coordination (n=28)	10.0%	24.3%**	4.9%*	8.8%	12.7%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%
$\chi^2=29.477$; $df=12$; $p=0.003$					

*: significant difference between the observed and the expected frequency on the 5%-level

***: significant difference between the observed and the expected frequency on the 1%-level

Table 3

Cross-tabulation and contingency analysis of subsidiary role and coordination pattern.

	<i>Subsidiary Role</i>					<i>Sum</i>
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	
<i>n=226</i>	<i>Marketing Satellite (n=31)</i>	<i>Production Unit (n=9)</i>	<i>Regional Miniature Replica. (n=82)</i>	<i>Global Product Specialist (n=12)</i>	<i>Regional Product Specialist (n=92)</i>	
(1) broad-intensive control (n=41)	12.9%	66.7%***	25.6%	16.7%	8.7%*	18.1%
(2) bureaucratic control (n=40)	12.9%	11.1%	15.9%	16.7%	21.7%	17.7%
(3) moderate centralization (n=63)	41.9%*	11.1%	32.9%	16.7%	21.7%	27.9%
(4) normative coordination (n=55)	6.5%*	11.1%	17.1%	50.0%	34.8%*	24.3%
(5) loose coordination (n=27)	25.8%*	0.0%	8.5%	0.0%	13.0%	12.0%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
$\chi^2=42.304; df=16; p=0.000$						

*: significant difference between the observed and the expected frequency on the 5%-level

**: significant difference on the 1%-level

***: significant difference on the 0.1%-level

Table 4

Two-factor ANOVA for the effect of subsidiary role and coordination pattern on the performance of the subsidiary

<i>Source of Variance</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sign.</i>
Main Effects					
Subsidiary Role	18.555	4	4.639	5.011	0.001
Coordination Pattern	2.142	4	0.535	0.578	0.679
Interaction Effect					
Subsidiary Role * Coordination Pattern	20.634	13	1.587	2.304	0.038
Model	49.181	21	2.342	2.530	0.000