

**Innovation through Ambidexterity: How to Achieve the Ambidextrous  
Organization**

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# **Innovation through Ambidexterity: How to Achieve the Ambidextrous Organization**

## **ABSTRACT**

It has long been recognized in the literature that the pursuit of radical or disruptive innovation by established firms poses an organizational challenge for the firm. This is because the skills, structures, processes and mindsets required for exploiting the existing business are fundamentally different and often conflict with those required for radical innovation (i.e. exploration). This has led researchers to propose the need for “ambidextrous” organizations—companies capable of achieving efficiency in their existing business while at the same time having the strategic foresight to innovate and explore new businesses. Past research has found some support for a positive relationship between performance and the ability to be ambidextrous. There is, however, little evidence on *how* a firm can actually achieve ambidexterity. In this paper, we explore the issue of ambidexterity in the context of diversified firms. Specifically, we examine diversified firms that need to manage divisions that face conflicting demands for integration and responsiveness. Not all divisions of a diversified firm face such conflicting demands, so we focus on only those divisions that do. These divisions must be given autonomy to be locally responsive but must also be centrally controlled to allow for the efficient exploitation of interdependencies with the parent (and other divisions in the diversified firm). We use theory to propose ways by which a diversified firm could achieve such ambidexterity in its handling of these divisions. We then utilize questionnaire data from the 100 biggest business Groups in Taiwan to empirically test our hypotheses. We find that granting operational autonomy to separate divisions while centralizing strategic and financial controls promotes the achievement of ambidexterity. We also find that ambidexterity could be promoted through the use of strong values, rotation of managers and internal training programs.

## **Innovation through Ambidexterity: How to Achieve the Ambidextrous Organization**

The ability of a firm to exploit its current business while exploring new territory (in terms of new technologies, markets, products or business models) has long been recognized as a critical source of competitive success (Eisenhardt and Martin, 2000; March, 1991; Thompson, 1967; Tushman and O'Reilly, 1996; Quinn and Cameron, 1988.) The need to achieve a “balance” between these two distinct activities has been proposed in a wide range of management areas, including organization theory (e.g. Holmqvist, 2004), managerial economics (e.g. Ghemawat and Costa, 1993), international business (e.g. Bartlett and Ghoshal, 1989) and strategic management (e.g. Winter and Szulanski, 2001).

However, achieving this balance is a “central paradox of administration.” (Thompson, 1967, p.15) This is because the skills, mindsets, structures and processes required to achieve exploitation of the current business are fundamentally different and often conflict with those required to achieve exploration. For example, in a classic study Burns and Stalker (1961) proposed that organizations developing new products (i.e. exploring) should be organic, whereas organizations engaged in exploiting their existing businesses should be mechanistic. Several other studies have shown that exploration and exploitation require substantially different structures, processes, skills and strategies that appear contradictory and difficult to combine (Benner and Tushman, 2003; Levinthal and March, 1993; March, 1991; Sheremata, 2000; Tushman and O'Reilly, 1996).

Organizations that are capable of achieving the appropriate balance between exploitation and exploration have been labeled “ambidextrous” organizations (e.g. Duncan, 1976; Tushman and O'Reilly, 1996). Recent studies have empirically tested the relationship between organizational performance and the ability to be ambidextrous and have generally found a positive relationship (e.g. Adler, Goldoftas and Levine, 1999; Ahuja and Lampert, 2001; Benner and Tushman, 2002; Gibson and Birkinshaw, 2004; He and Wong, 2004; McDonough and Leifer, 1983). But whereas

the need for and the beneficial effects of achieving ambidexterity have been recognized, little work has been done on exactly *how* organizations could achieve ambidexterity.

Most authors have viewed the achievement of ambidexterity as a structural issue (e.g. Christensen 1997; Duncan, 1976; Tushman and O'Reilly, 2004). For example, Duncan (1976) proposed that organizations achieve ambidexterity by putting in place “dual structures” so that certain divisions focus on alignment while others focus on adaptation. Similarly, Christensen and Raynor (2003) proposed that established companies could only pursue a disruptive innovation in a separate unit, away from the interference of the parent company. O'Reilly and Tushman (2004) suggested that ambidextrous organizations create separate units to pursue new opportunities but keep the same general manager to manage both the new unit and the parent company.

Recently, attention has begun to shift towards non-structural elements of ambidexterity such as culture and values, incentives, mindsets and strategic foresight (e.g. Adler, Goldoftas and Levine, 1999; Ahuja and Lampert, 2001; Costanzo, 2004; Eisenhardt and Martin, 2000; Gibson and Birkinshaw, 2004; MacKay and McKiernan, 2004; Siggelkow and Levinthal, 2003; Siggelkow and Rivkin, 2005; Volberda, 1996). Our paper builds upon this tradition and proposes several non-structural strategies that firms could pursue in order to achieve ambidexterity. In other words, over and above creating separate units, what else must a firm do to achieve ambidexterity? For the purposes of this research, we take ambidexterity to mean the ability of a firm to simultaneously achieve decentralization and centralized control.

The context of a diversified firm provides a perfect setting to explore this question. This is because the separate units already exist in a diversified firm. Many, though not all, may be pursuing strategies or may be facing external environments that require them to have as much autonomy from the parent as possible (so as to achieve local responsiveness). But these same units may also need to be integrated with the parent or with other divisions within the portfolio so as to exploit synergies with each other. The question then is: “how could the corporate parent provide autonomy to these divisions while at the same time exercising centralized control over them?”

In this paper, we utilize questionnaire data from the 100 biggest business groups in Taiwan<sup>1</sup> to explore how these diversified firms achieve this kind of ambidexterity. To collect the necessary data, we have administered two questionnaire surveys: one at corporate headquarters and one at division level. Because we have been granted access to the divisions of these diversified groups (as well as the CEO of the Group at corporate HQs), most of the data that we use in this paper comes from the general managers who actually run the divisions. As a result, we can determine what kind of environment *each* division is facing or what kind of strategy it is pursuing. This in turn will allow us to identify those divisions that are facing situations of strategic ambiguity—a situation that demands ambidextrous behaviors by the corporate parent. In addition, since we have been given data on each division’s performance, we will be able to assess whether our predictions as to how these divisions should be managed lead to superior performance.

## THEORY AND HYPOTHESES

Organizational ambidexterity has been defined as the ability of a firm to manage demands in its task environment that are in conflict or require trade-offs (e.g. Duncan, 1976; Gibson and Birkinshaw, 2004; Tushman and O’Reilly, 1996). The academic literature has identified numerous instances when a firm would be required to reconcile (if not eliminate) difficult trade-offs—for instance, following a differentiation strategy while adopting a low-cost one as well; exploiting the current business while exploring new ones; investing in current versus future projects; managing a mature business as well as a new, emerging business. Within diversified firms, a situation that requires the reconciliation of difficult trade-offs arises when divisions within the portfolio face conflicting strategic imperatives—for example, a division might require autonomy from the parent to pursue its own strategy but at the same time has to integrate with the parent to allow for the efficient exploitation of synergies with other divisions. As we argue below, several such situations may present themselves in a diversified firm and our thesis is that the corporate parent must

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<sup>1</sup> Our use of Taiwanese firms is opportunistic: as a part of a major research project, we have been granted unprecedented access to divisional level data in some of the most prestigious business groups in Taiwan. Thus, unlike most of the previous studies on this subject that gathered their data at the headquarters level, we have detailed data for

become ambidextrous if it is to reconcile such conflicting demands.

### The need for ambidexterity in diversified firms

Past academic work on diversification has argued that since different divisions within the same multi-business firm often face different levels of volatility in their external environments and often pursue different business level strategies, then the administrative mechanisms that corporate headquarters use to manage these divisions—such as evaluation and incentive systems—should differ accordingly (e.g. Govindarajan, 1988; Govindarajan and Fisher, 1990; Gupta, 1987; Gupta and Govindarajan, 1986; Hill, 1990). Several empirical studies have provided evidence that suggests that such a differentiated approach towards divisions is indeed possible (e.g. Chu 1997; Ghoshal and Nohria, 1989; Govindarajan and Fisher, 1990; Gupta and Govindarajan, 1986; Lioukas, Bourantas and Papadakis, 1993).

More specifically, it has been argued and shown empirically that different divisions within the same multi-business firm do indeed receive different degrees of autonomy (from corporate headquarters) to take strategic, financial and operational decisions. Several studies have found that the divisions that received the most autonomy were those which: (1) faced a volatile environment; (2) followed a differentiation strategy; and (3) did not share resources and were not interdependent with other divisions in the company (e.g. Chu, 1997; Govindarajan, 1988; Gupta, 1987). It has been further shown that under these three conditions, divisions that are granted decision-making autonomy perform better than divisions that are not given autonomy (Chu, 1997; Lioukas et al., 1993).

The rationale for the existence of a positive relationship between autonomy and these three contingency factors is well accepted in the literature. A central proposition of organizational theory (e.g. Lawrence & Lorsch, 1967; Thompson, 1967) is that there is no one best way to organize and that the different ways of organizing are not equally effective. Building on this principle, the information processing perspective argues that the main purpose of organizational

design is to enable each sub-unit to cope with its information processing requirements, which are determined by task uncertainty. Because of variations in environmental uncertainty, different organizations need different arrangements to be able to deal with their information processing requirements (Galbraith, 1973, 1977; Nadler & Tushman, 1988).

Following the classic work of Burns & Stalker (1961), Woodward (1965), and Lawrence & Lorsch (1967), Galbraith (1973) argued that the greater the uncertainty and/or diversity of the task, the greater the amount of information needed to be processed during the decision making and task execution in order to achieve a given level of performance. Therefore, uncertainty is the core concept upon which the organization design frameworks are based. Theoretically, there are at least two sources of uncertainty: uncertainty of external environment (Burns & Stalker, 1961), and uncertainty of task (Perrow, 1967). Thus the appropriate design of organizational structure is contingent upon these two contextual variables.

With regard to the uncertainty of external environment, it has been well established by authors such as Thompson (1967) and Lawrence and Lorsch (1967) that the structures of organizations are and should be differentiated according to the characteristics of the external environments they face. This argument is obviously applicable to multi-business firms: different divisions compete in different industries and thus face different levels of environmental uncertainty. A division that competes in an industry with high environmental complexity needs a more decentralized organization if it is to deal effectively with the high information processing requirement it faces and react quickly and flexibly to environmental changes; conversely, for divisions that compete in industries which are characterized by low levels of complexity, a more centralized control system could be adopted (Govindarajan, 1986).

Furthermore, the competitive strategies adopted by divisions influence the task uncertainty faced by them (Porter, 1985, 1987). As a result, their information processing needs will differ accordingly: a division that follows a differentiation strategy faces a higher level of uncertainty in its task environment because this strategy requires innovation and dynamism to be effective (Porter, 1987). Therefore, such a division would benefit from high degrees of autonomy and

decentralization (Govindarajan, 1986; Gupta, 1987). On the other hand, a division that follows a low cost strategy faces a more stable task environment. Therefore, such a division requires less autonomy so that corporate HQs can monitor divisional operations more closely to ensure that costs are controlled efficiently.

In summary, the information processing perspective suggests two main contingency factors influencing how much autonomy different divisions receive (or should receive) from corporate headquarters: the environmental complexity faced by divisions and the competitive strategy adopted by each division. High environmental complexity and a differentiation strategy are argued to be associated with higher divisional autonomy.

A different motivation for structural differentiation within diversified firms has been proposed by authors such as Pfeffer(1981), Pfeffer and Salancik (1978) and Porter (1985). Their position is based on resource sharing and interdependencies among divisions.

Resource sharing refers to the extent to which a focal division shares functional activities (such as marketing, manufacturing, R&D, and human capital) with other divisions within a firm (Vancil, 1980). Resource sharing among divisions could be a source of value for diversified firms, especially for the related diversified and vertically integrated ones (i.e. Porter, 1987). This is because high resource-sharing may yield a synergistic cost advantage in that the divisions can access the shared resource at a lower cost than they would have if they each had to acquire it separately (Gupta & Govindarajan, 1986; Porter,1985). In addition, resource sharing can enhance differentiation by contributing to the uniqueness of an activity and by lowering its cost (Porter, 1985).

Resource sharing is not cost free. It requires extensive coordination and cooperation among divisions, activities that require the active involvement of corporate headquarters (McCann & Fery, 1979). In addition, resource sharing and coordination imply loss of divisional autonomy, constrained flexibility and distorted performance accountability (Gupta and Govindarajan, 1986).

Resource sharing has the following implication for how HQs should manage divisions: since different divisions can have different levels of resource sharing with each other, then the administrative mechanisms that the corporate HQs uses to manage these divisions should differ accordingly. When a division's level of resource sharing is high, the need for central coordination is strong and a more centralized control style is suggested. Conversely, when inter-divisional resource sharing is low, a decentralized HQ-division relationship is proposed.

Overall, therefore, we would expect that divisions that receive the most autonomy will be those which: (1) face a volatile environment; (2) follow a differentiation strategy; and (3) do not share resources and are not interdependent with other division in the company. These predictions have been supported empirically (e.g. Chu, 1997; Govindarajan, 1988; Gupta, 1987). It has been further shown that under these 3 conditions, divisions that are granted decision-making autonomy perform better than divisions that are not given autonomy (Chu, 1997).

While these propositions are well accepted in the diversification literature, they also give rise to an interesting and unexplored conundrum. Namely, what happens in situations where a division faces conflicting strategic imperatives? For example, how should HQs manage a division facing a volatile environment that is also very interdependent with other divisions in the group? Theory suggests that because of the volatility of its environment, this division should be granted autonomy; but because of high interdependence with other divisions, it should be centrally controlled and given little autonomy.

This is an example of what Hamel and Prahalad (1983, p.341) have called "situations of strategic ambiguity"—that is, situations where divisions face conflicting demands for integration and responsiveness which makes management of these divisions especially difficult. It is exactly the kind of situation that, as we have argued in this paper, requires the corporate parent to adopt ambidextrous behaviors. Several such situations may present themselves. For example, a division in a stable (mature) business that is following a differentiation strategy faces a situation of strategic ambiguity. The same is true for a division in a volatile business that has adopted a cost leadership strategy. In fact, given the three contingency variables identified above, we could come up with

eight possible scenarios of strategic ambiguity. While we do not want to pretend that these are the only instances when strategic ambiguity may creep in, it appears that such situations happen often enough in practice to warrant further examination.

Situations such as these have been identified and examined in the *multinational* literature. For example, Bartlett and Ghoshal's (1989) examination of the management of the "transnational" organization tackled exactly this issue. Similar issues have also been explored by Hamel and Prahalad (1983) and by Prahalad and Doz (1987). Our goal here is to use the insights that have emerged from this literature on multinationals to study this phenomenon within a diversified firm.

Given the three contingency variables that we identified above as influencing how much autonomy each division will receive, we can identify eight possible strategic scenarios that a specific division may be facing at any given time. The eight possible scenarios along with their organizational implications are presented in table 1. It should be clear from table 1 that six of these scenarios (Nos. 1, 2, 3, 5, 7, 8) represent situations of strategic ambiguity that would require ambidextrous behaviors from the corporate parent.

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The discussion so far leads us to propose our first hypothesis. Given the organizational implications outlined in table 1, we would expect that divisions facing scenario (4)—that is volatile environment, differentiation strategy and low interdependence—will be given the highest level of autonomy; while divisions facing scenario (6)—that is stable environment, cost strategy and high interdependence—will be given the least amount of autonomy. The other divisions facing any one of the other six scenarios will have intermediate levels of autonomy. Therefore:

*Hypothesis 1: Divisions facing scenario (4) will have statistically significant higher levels of autonomy relative to divisions facing scenarios (1), (2), (3), (5), (7), (8) which in turn will have higher levels of autonomy relative to divisions facing scenario (6).*

It is important at this point to stress that we do not believe that these 8 scenarios are the only possible ones that a division might face. We ended up with eight scenarios because we started out with three contingency variables. It is possible to identify from the literature even more variables that might influence how much autonomy a division gets. Every additional contingency variable will double the possible scenarios facing a division. For example, even the addition of one more contingency variable will give rise to 16 possible scenarios. However, we decided to focus on just the three contingency variables because they are, according to the literature, the most important factors influencing how much autonomy each division gets. In addition, our goal is not to identify every possible scenario that a division might face. Rather, we want to argue that it is possible for a division to face strategically ambiguous scenarios—whether they face one or ten such scenarios is not important. We further want to examine how such situations are handled. We turn to this topic next.

### Managing Strategic Ambiguity

The management and reconciliation of conflicting demands is not easy. In fact, there has been a lot of discussion in the academic literature as to whether internal organizational tensions, such as those between low cost and differentiation, can ever be effectively reconciled. For example, Porter (1996) has argued that the trade-off between low cost and differentiation strategies is insurmountable.

The primary solution offered to solve this problem is to keep the two strategies physically separate in two distinct organizations. This is the “innovator’s solution” that’s primarily associated with Christensen’s (1997) work on disruptive innovation but other academics have advocated it as well (e.g. Burgelman and Sayles, 1986; Gilbert and Bower, 2002). Even Porter (1996) has come out in favor of this strategy. Despite arguing that most companies that attempt to compete with dual strategies will likely fail, he has also proposed that: “...companies seeking growth through broadening within their industry can best contain the risks to strategy by creating stand-alone units, each with its own brand name and tailored activities.” (Porter, 1996, page 77).

This structural solution has found some support in the academic literature (e.g. Tushman, Smith,

Wood, Westerman and O'Reilly, 2004). However, it has also been argued that finding the appropriate structure may be only part of the solution and that we should also look for non-structural elements of ambidexterity (e.g. Gibson and Birkinshaw, 2004). Here, we propose that the multinational literature could offer several insights on how situations of strategic ambiguity could be managed within diversified firms. In fact, Ghoshal and Nohria (1993, p. 33) suggest that: "Our argument [that the complexity of a firm's structure must match the complexity of its environment] can easily be extended...to any multidivisional firm."

The most relevant proposition stemming from this literature is that multinationals which operate in markets where the forces for national responsiveness are as strong as the forces for global integration, will require the "transnational" form of organization to be effective (see for example Bartlett and Ghoshal, 1989; and Ghoshal and Nohria, 1989). This structure allows each subsidiary the freedom to differentiate itself according to local demands but at the same time "...overlays the distinctly structured relationships with a dominant overall integrative mechanism—whether through strong centralization, formalization, or normative integration." (Ghoshal and Nohria, 1993: 28)

Therefore, the basic proposition is to find ways to grant the division enough autonomy to make operational decisions suitable for its environment while at the same time making sure that integrative mechanisms are in place to exploit interdependencies. There is no one best way to achieve this but one possibility may be to follow the suggestion of Williamson (1975) and Hill (1988) and grant the divisions **operational** autonomy while maintaining central control over **strategic** and **financial** matters . This proposition is in the spirit of the "transnational" solution and allows for a delicate balance to be struck between divisional autonomy on the one hand and central control on the other. Therefore:

*Hypothesis 2: Among divisions facing strategic ambiguity, those that display high operational autonomy but low strategic and financial autonomy will outperform all other divisions.*

Another insight that has emerged from the multinational literature is that "...structure may be a

relatively ineffective tool for managing strategic responsibility, particularly when the firm faces strategic ambiguity. Management must use other tools at its disposal, including systems, corporate values and culture, and positioning assignment of key people.” (Hamel and Prahalad, 1983: 347).

This insight suggests two other possible mechanisms for managing strategic ambiguity in diversified firms. The first mechanism is a strong culture or strong shared values. Creating strong shared values and beliefs among the managers of divisions and headquarters enables the corporate center to grant autonomy to divisions without fear that the divisions will pursue their own interests at the expense of the group as a whole. As Ouchi (1980: 138) noted: “common values and beliefs provide the harmony of interests that erase the possibility of opportunistic behavior.” Furthermore, as argued by Barnard (1939), shared values enhance the sense of mutual interdependence in the organization and can therefore facilitate the corporate center in its attempts to exploit synergies among divisions, even when these divisions enjoy decision-making autonomy. The useful role of shared values as a mechanism for managing headquarter-division relations has been demonstrated in recent studies by Chu (1997) and Nohria and Ghoshal (1994). Therefore:

*Hypothesis 3: Among divisions facing strategic ambiguity, those that belong to corporations which display high shared values will outperform all others.*

The second mechanism for managing strategic ambiguity in diversified firms is the firm’s organizational context. For Prahalad and Doz (1981: 5), context means the “...blending of organizational structure, information systems, measurement and reward systems and career planning and a fostering of common organizational culture.” For Hamel and Prahalad (1983: 347) it means: “...sophisticated management of systems, the corporate cultural milieu and people.” The argument is that divisions could be given decision-making autonomy and still kept integrated within the group through a variety of integrative mechanisms such as high and continuous communication, transfer of managers across functions and divisions, common training of people and the development of a strong culture. Therefore:

*Hypothesis 4-1: Among divisions facing strategic ambiguity, those with high levels of*

*communication will outperform all others.*

*Hypothesis 4-2: Among divisions facing strategic ambiguity, those with a high level of transfer of managers will outperform all others.*

*Hypothesis 4-3: Among divisions facing strategic ambiguity, those with a high level of training programs will outperform all others.*

## DATA AND METHODOLOGY

### The Sample

The top 100 business groups in Taiwan were asked to participate in this research. These are the largest and most diversified companies in Taiwan and together account for more than 35% of the country's GNP. A total of 34 business groups agreed to participate. We tested for response bias by comparing the size (assets and number of employees) and profitability (ROA, net profit rate and ROE) of those business groups that agreed to participate versus those groups that did not want to participate. No response bias was detected for either profitability or size.

The 34 participating groups had a total of 186 Divisions. Data was collected via two questionnaires: one was completed in a face-to-face meeting with the CEO of the participating business group; and one was sent to the 186 divisional general managers of these 34 groups. The divisional questionnaire was distributed either by senior staff members at HQ (who helped with contacting divisions, distributing questionnaires and following up); or if HQ did not want to actively participate, the divisional general manager was contacted directly and notified that HQ had already agreed to participate. The draft questionnaires were first tested on two divisional general managers and three senior HQ staff from five business groups, before the final ones were distributed.

Of the 186 divisional general managers who received questionnaires, 148 (80%) responded. In total, 136 (73%) responses were usable. On average, the responding managers had worked for their business groups for 18.8 years and for their current divisions for 13.4 years.

## The Variables

Data was collected to calculate the following variables:

**Autonomy Granted to Divisions:** Based on instruments developed by Hill (1988), we measured the degree of autonomy given to divisions to take strategic, financial and operational decisions. Using data from the divisional questionnaire, we constructed three composite scales from the responses to 38 questions (cf. Hill, 1988): OPERATE, STRATEGIC, and FINANCIAL. The scale OPERATE measured head office involvement in the operating decisions of the divisions. It was constructed from the responses to 19 questions. STRATEGIC measured the extent to which strategic controls were centralized. It was constructed from the responses to 14 questions. Similarly, FINANCIAL measured the extent to which the head office exercised centralized financial controls over divisions based upon abstract profit criteria. It was constructed from the responses to five questions.

The three scales ranged in value from 1 to 7. A value of 1 indicated that: “HQ makes decisions without prior consultation of the divisions” while a value of 7 indicated that: “Divisions make decisions without prior consultation of the HQ”. High scores indicated a high degree of decentralization of control over strategic, operational and financial decisions. The overall degree of decentralization was measured by averaging the mean scores of these three scales. Summary statistics as well as the results of Cronbach Alpha reliability tests are shown in Table 2.

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**Divisional Performance:** Consistent with the arguments of Gupta & Govindarajan (1984) and Govindarajan (1988), we measured the performance of a division as its actual performance relative to what HQ expected from the division, rather than as an absolute figure. Data was collected at the divisional level on the following performance items: gross profit, profit growth, labor productivity,

return on sales, return on investment, development of new products, sales growth, market share, cash flow from operations, capacity utilization, cost control, personnel development, company image, and customer satisfaction. For each of these 14 items, respondents were asked to rate their divisional performance relative to the HQ's expectation on a seven-point scale, ranging from "Not satisfactory at all" (=1) to "Outstanding" (=7). A straight average of these dimensions was used as the measure. Values ranged from 1.86 to 7.00, with a mean of 4.14 (Cronbach Alpha = .9324).

Since the divisional managers were asked to rate their performance, we expected this answer to be biased upwards (i.e. the managers would report that their performance was better than what it really was). However, we did not consider this a problem because we did not expect any divisional manager to be systematically *more* biased than others (i.e. we expected all to be biased and in the same direction). To make sure of this, we utilized the data collected through the CEO/HQs questionnaire: we first classified the divisions into two groups—one group contained all the divisions which were rated as "performing very well" by their corporate HQs and one group contained those divisions which were rated as "not performing well" by their corporate HQs. We then compared the answers (as regards their performance) of divisions that HQs considered as performing well against the answers of divisions whose HQs did not think they were performing well. As expected, the difference in responses between the two types of divisions was not statistically significant.

We tested for bias in another way: from the questionnaire survey conducted with the CEO at corporate headquarters, we had objective data on the performance of each business group that participated in this study. Specifically, we had objective data for each Group's return on Assets (ROA); return on equity (ROE); net profit rate (PR); and sales growth (GS). We therefore compared the responses of divisions that belonged to profitable groups against the responses of divisions that came from unprofitable groups. Again, the difference in responses with respect to the performance variable were not statistically significant.

**Independent Variables:** Data was collected for a number of independent variables. These variables include the three contingency variables (environmental complexity faced by each

division, competitive strategy of each division, and resource sharing among divisions), as well as shared values, communication, rotation of managers, and training programs. The independent variables were operationalized using a variety of instruments. Details on how each variable was constructed are presented in the Appendix.

### Scenarios of Strategic Ambiguity

In order to test Hypothesis 1, we need to classify divisions into the eight scenarios of table 1. For example, divisions which face a volatile environment, follow a differentiation strategy and are highly interdependent with other divisions should be placed in scenario 1. On the other hand, divisions which face a stable environment, follow a differentiation strategy and have low interdependence with other divisions should be placed in scenario 8.

We carried out this classification as follows: divisions were first ranked according to the complexity of their environment. Those divisions that had a complexity score above the median were placed in the “volatile environment” group whereas divisions that had a complexity score below the median were placed in the “stable environment” group. Next, divisions were ranked according to their competitive strategy scores: those that had scores below the median in the competitive strategy score were placed in the “Low cost” group while those that had scores above the median were placed in the “Differentiation” group. Finally, divisions were ranked according to their resource-sharing scores: those that had scores below the median in the resource-sharing score were placed in the “Low” interdependence group while those that had scores above the median were placed in the “High” interdependence group<sup>2</sup>. The divisions were then classified into scenarios on the basis of table 1. The results of this classification are summarized in table 3.

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<sup>2</sup> The use of the median as our cut-off point is obviously subjective. Ideally, we would have liked to perform sensitive analysis by using different cut-off points (such as the mean or quartiles). Unfortunately, the use of any cut-off point other than the median results in scenarios with too few divisions in them to make the statistical analysis meaningful. We therefore use only the median out of necessity.

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## EMPIRICAL RESULTS

Our first hypothesis proposed that divisions facing scenario (4)—that is, volatile environment, differentiation strategy and low interdependence-- will be given significantly higher levels of autonomy than divisions facing scenarios (1), (2), (3), (5), (7), (8), which in turn will be given higher levels of autonomy than divisions facing scenario (6). One-way ANOVA and Duncan's tests were employed to compare the differences in autonomy granted to the different divisions. The results are shown in table 4.

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There were 19 divisions facing scenario (4) and their mean levels of strategic, operational and financial autonomy were 5.76, 6.57 and 5.79 respectively. By contrast, there were 97 divisions facing scenarios (1), (2), (3), (5), (7) and (8) and their respective mean levels of autonomy were 5.02, 6.17 and 4.84—all significantly *lower* than the corresponding values for the divisions in scenario (4)--- as proposed by Hypothesis one. Similarly, there were 20 divisions facing scenario (6) and their mean levels of strategic, operational and financial autonomy were 4.23, 5.61 and 3.97 respectively. Again, these values were significantly lower than the corresponding values for divisions in the other scenarios—exactly what our first hypothesis proposed. Similar results were obtained when the overall autonomy given to divisions was examined. Thus, hypothesis one is strongly supported by the data.

To test the remaining hypotheses, we used only the sub-sample of divisions which faced strategic ambiguity –that is, the 97 divisions facing scenarios 1, 2, 3, 5, 7, and 8. Our second hypothesis proposed that among divisions facing strategic ambiguity, those that received high operational autonomy but low strategic and financial autonomy should perform better than all other divisions.

To empirically test this, we had to classify divisions according to the degree of autonomy that they received from HQs and then determine whether what they received was “appropriate” or not (as proposed by hypothesis 2).

We first used the *mean* value of strategic, financial and operational autonomy that each division received as the cut-off point: divisions receiving more autonomy than the mean were classified as receiving “high” autonomy, whereas divisions receiving less autonomy than the mean were classified as receiving “low” autonomy. Next, all divisions receiving high operational but low strategic and financial autonomy were classified as receiving “appropriate” autonomy from HQs (as proposed by our hypothesis). Using this method, we classified 13 divisions as receiving “appropriate” autonomy. Finally, the performance of those divisions placed in the “Appropriate” group was compared to the performance of all other divisions (84 in total).

To make sure that our results did not depend on the actual cut-off point used, we also utilized three other cut-off points to determine whether a division received “high” or “low” autonomy: first, divisions receiving more autonomy than the *median* value of strategic, financial and operational autonomy were classified as receiving “high” autonomy, whereas divisions receiving less than the median were classified as receiving “low” autonomy. Second, divisions in the top quartile (of each category of autonomy) were classified as receiving “high” autonomy whereas divisions in the bottom quartile were classified as receiving “low” autonomy. Finally, divisions in the top one-third (of each category of autonomy) were classified as receiving “high” autonomy whereas divisions in the bottom one-third were classified as receiving “low” autonomy. Once the “high” and “low” classifications were made, divisions were placed in the “Appropriate” group (as proposed by our hypothesis) in the same manner as before--divisions which had high operational and low strategic and low financial autonomy were classified in the “Appropriate” group while all others were placed in the “inappropriate” group. The performance of those divisions placed in the “appropriate” group was then compared to the performance of those divisions placed in the “inappropriate” group. According to hypothesis two, there should be a statistically-significant difference in the performance of the two groups.

Table 5 shows the results of this analysis. Row (A) shows the results when the mean is used as the cut-off point. Row (B) shows the results when the median is used as the cut-off point. Row (C) shows the results when divisions are placed in the top one-third and bottom-one third. Row (D) shows the results when divisions are placed into quartiles.

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Obviously, the third and fourth methods of classification result in groups that contain too few observations for any meaningful analysis. However, the groups that result from the first two methods contain enough observations for meaningful comparisons to be made. In both cases, the divisions placed in the “Appropriate Autonomy” group have performance which is much higher (at the 0.1 level) to the performance of all other divisions. This result provides strong support for our second hypothesis.

We also tested this hypothesis in another way. Our basic proposition is that divisions facing strategic ambiguity should be given high operational but low strategic and financial autonomy. For each division, therefore, we calculated the variable “structural autonomy” as the product of  $[\text{STRATEGIC} \times \text{FINANCIAL} \times (1 \div \text{OPERATE})]$ . Based on our proposition, we would expect that those divisions facing strategic ambiguity would benefit from having lower levels of “structural autonomy”. This expectation was supported through simple regression analysis: when divisional performance was regressed against “structural autonomy”, the beta coefficient of “structural autonomy” came out as  $-0.174$  and statistically significant at the 1% level. This implied that the lower the “structural autonomy” to divisions, the higher their performance.

Further tests were carried out by ranking the 97 divisions according to their “structural autonomy” values. Those placed in the bottom quartile were classified as receiving “appropriate” structural autonomy, while those placed in the top quartile were classified as receiving “inappropriate” structural autonomy. For sensitivity analysis purposes, different cut-off points were used as well. As before, the sample median was used as a cut-off point: those divisions with a “structural autonomy” value below

the sample median were classified as receiving “appropriate” structural autonomy while those above the median were classified as receiving “inappropriate” structural autonomy. In addition, those divisions in the bottom one third of structural autonomy values were classified as receiving “appropriate” autonomy while those in the top one third were classified as receiving “inappropriate” autonomy. The performance of the divisions placed in the “appropriate” group was then compared to the performance of those divisions placed in the “inappropriate” group. The results are shown in table 6.

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Row (A) shows the results when the median is used as the cut-off point. Row (B) shows the results when divisions are placed in the top one-third and bottom one-third. Row (C) shows the results when divisions are placed into quartiles. In all cases, the performance of divisions placed in the low (i.e. appropriate) structural-autonomy group is higher than the performance of divisions placed in the high (i.e. inappropriate) structural-autonomy group. In two of the three cases, the difference is statistically significant. Again, these results are in general support of our second hypothesis.

Our third hypothesis proposed that among divisions facing strategic ambiguity, those that belonged to corporations which displayed high shared values will outperform all others. To test for this, we had to sort the 97 divisions into two groups: a group that contained the divisions that had high shared values and a group that had divisions with low shared values. To do this, we employed the same methodology as before: first, all divisions were ranked according to their “shared values” index; second, they were classified into the two groups using the same four cut-off points as before (mean, median, upper and lower one-third and quartiles). Finally, the performance of divisions placed in the “high” shared-values group was compared to the performance of divisions placed in the “low” shared-values group. The results are shown in table 7.

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No matter which cut-off point is used to separate the divisions, the same result stands out: in situations of strategic ambiguity, divisions displaying high shared values outperform all others. This result provides strong support for Hypothesis H3.

Finally, our fourth hypothesis proposed that divisions with high levels of communication, training and transfer of people will outperform all others. To test this, we used the median value for each one of these variables as our cut-off point to assign divisions into “high” and “low” groups. The performance of divisions in the two groups were then compared, as before. The results are shown in table 8.

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As predicted by Hypothesis 4, divisions with high levels of communication, training and transfer of people tend to outperform all other divisions. The difference in performance is statistically significant and in support of H4.

## SUMMARY AND CONCLUSION

In this paper, we examined the issue of ambidexterity within the context of diversified firms. Specifically, we proposed that ambidexterity is the ability of an organization to pursue two disparate things at the same time. Within a diversified firm, such a situation arises when divisions face conflicting strategic imperatives, forcing the corporate parent to reconcile two disparate demands: granting autonomy to the division while exercising central control. We, therefore, explored how the corporate parent could achieve this kind of ambidexterity.

We proposed a variety of non-structural mechanisms that could be used by corporate HQs to effectively control divisions facing conflicting strategic imperatives. Using insights from the multinational literature (e.g. Bartlett and Ghoshal, 1989), we argued that the corporate center should grant these divisions operational autonomy while centralizing strategic and financial

decisions so as to achieve coordination and integration within the firm. In addition to this autonomy solution, we proposed a cultural solution (conceptualized as shared values in this paper) to resolve the strategic ambiguity dilemma. We argued that the existence of strong, shared values within the organization would allow corporate headquarters to grant autonomy to divisions without losing control over them. In addition, we proposed that frequent communication, frequent rotation of managers, and corporate-sponsored training programs could all be employed as integrative mechanisms so that on the one hand, divisions could have a lot of decision-making autonomy while on the other hand, they can remain integrated within the firm.

Our evidence from 136 divisional general managers in 34 Taiwanese business groups suggests that different divisions receive different levels of decision-making autonomy from corporate centers, depending on the strategic scenarios faced by them. In addition, we found that divisions facing scenarios of strategic ambiguity would be better served if they are given operational autonomy but controlled centrally when it comes to strategic or financial issues. We also found evidence that strong, shared values can help in managing strategic ambiguity. Finally, we found that the use of communication, rotation of managers, and training programs can have a positive impact on the performance of divisions facing strategic ambiguity. All these findings contribute to the emerging literature on how to manage internal differentiation within diversified firms.

We believe that our findings are relevant not only for the diversification literature but also for the literature on ambidextrous organizations. Most of the discussion on how to achieve ambidextrous organizations has focused on finding the appropriate structure that would allow the firm to pursue seemingly disparate and conflicting activities (e.g. Christensen, 1997; Duncan, 1976; O'Reilly and Tushman, 2004). Yet, organization theory would suggest that structure is only one of the elements of the organizational "context" that underpins the strategy of a firm (e.g. Ghoshal and Bartlett, 1994). Our research has uncovered several non-structural solutions that promote ambidexterity in the firm. Future research should try to explore what other components of a firm's organizational context facilitate the adoption of ambidextrous behaviors by the firm.

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## APPENDIX

### Measurement of Independent Variables

**Environmental Complexity faced by each division:** This variable was operationalized as the degree of technical dynamism that each division faced in its industrial environment. Technical dynamism was proposed by Lawrence & Dyer (1983) as an important constituent of environmental information complexity. Respondents were asked to indicate the speed of technical innovation in their main industry, ranging from “Extremely rapid” (=7) to “Extremely slow” (=1). The higher the score, the more dynamic the environment they faced. The mean score was 4.62.

**Competitive Strategy of each division:** Each division’s competitive strategy (low-cost or differentiation—Porter, 1985) was calculated as follows: using a seven-point response scale ranging from significantly lower (=1) to significantly higher (=7), divisional general managers were asked to position their products relative to their competitors on the following three dimensions: percentage of sales spent on research and development, product quality, and product features. Divisions with higher-than-average combined scores were classified as following the differentiation strategy; divisions with lower scores were identified with the low cost strategy. Scores ranged from 3.33 to 7.00, with a mean score of 5.07 (Cronbach Alpha = .7805).

**Resource Sharing among Divisions:** Following the measure developed by Gupta & Govindarajan (1986), resource sharing was defined as the importance and extent of resource sharing between a division and other divisions in terms of the following eight functions: manufacturing, marketing/sales, R&D, purchasing, human capital, financing, governance liaison, and other administrative activities. Two questions, both with a seven-point response scale, were asked for each of the functions. The first question collected data on a function’s importance in implementing the competitive strategy of a division, ranging from “not important at all” (=1) to “extremely important” (=7). The second question collected data on the extent to which a division shared resources with other divisions in each function, ranging from “none” (=1) to “a very great deal” (=7). Using as weights the data on the importance of the various functions on strategic implementation, we then developed a weighted-average measure of a division’s degree of resource

sharing with other divisions. The higher the weighted-average score, the higher the level of resource sharing that existed. Scores ranged from 0.86 to 5.63, with a mean of 3.57 (Cronbach Alpha = .8511).

**Shared Values:** This variable was operationalized as the combination of two items: (a) the extent to which corporate HQs emphasized the development and management of organizational value systems, and (b) the extent to which organizational members recognized the existence of these values. Thirteen questions were developed: ten items tried to capture the extent to which a firm used functions such as recruitment, selection, socialization processes, rites, ceremonies and rituals to develop and manage its value systems; and three items estimated the degree to which organizational members recognized the existence of organizational values. A seven-point scale was used to ask the respondents to provide information on their degree of agreement on the 13 statements, ranging from “Strongly disagree” (=1) to “Strongly agree” (=7). A mean score for the 13 items was calculated as the measure for “shared values” in our statistical analysis. The higher the mean score, the higher the degree of shared values within the firm. Scores ranged from 4.19 to 6.19, with a mean of 5.46 (Cronbach Alpha = .7508).

**Communication:** Divisional managers were asked how much and how often communication took place between a division and its corporate center. Respondents were asked to answer this on a seven-point scale, ranging from “Never” (=1) to “Very Frequently” (=7). The higher the score, the higher the level of communication a division had. Scores ranged from 1 to 7, with a mean of 5.27.

**Transfer of Managers:** A single question asked the respondents to indicate how much and how frequently rotation of managers across divisions within the firm happened. A seven-point scale was used, ranging from “It never happens” (=1) to “It happens very frequently” (=7). The higher the score, the higher the frequency of transfer of managers that the division had. Scores ranged from 1 to 7, with a mean of 4.43.

**Training Programs:** Divisional managers were asked to indicate how frequently they trained their employees by enrolling them in company training programs. A seven-point scale was used,

ranging from “Never” (=1) to “Very Frequently” (=7). The higher the score, the higher the level of training programs that a division offered. Scores ranged from 1 to 7, with a mean of 4.98.

**TABLE 1**  
**Three Contingency Variables and Eight Possible Scenarios That a Division Might Face**

Scenario	Environmental Conditions	Competitive Strategy	Interdependence among Divisions	Strategic Ambiguity
1	Volatile	Differentiation	High	Yes
2	Volatile	Cost	High	Yes
3	Volatile	Cost	Low	Yes
4	Volatile	Differentiation	Low	No
5	Stable	Cost	Low	Yes
6	Stable	Cost	High	No
7	Stable	Differentiation	High	Yes
8	Stable	Differentiation	Low	Yes

**TABLE 2**  
**Summary Statistics and Reliability of the Autonomy Variables**

Divisional Autonomy	Mean	S.D.	Items	Alpha
STRATEGIC	4.98	1.23	14	.9175
OPERATE	6.11	1.11	19	.9573
FINANCIAL	4.83	1.74	5	.8861
OVERALL	5.31	1.22	38	-- *

\* : The Cronbach alpha of the overall degree of autonomy was not calculated because this variable was simply the arithmetic mean of STRATEGIC, OPERATE, and FINANCIAL.

**TABLE 3**  
**Number of Divisions in Each Strategic Scenario**

Scenarios	Number of Divisions	Percentage (%)	Strategic Ambiguity
1	23	16.9	Yes
2	15	11.0	Yes
3	18	13.2	Yes
4	19	14.0	No
5	20	14.7	Yes
6	20	14.7	No
7	11	8.1	Yes
8	10	7.4	Yes
Total	136	100%	

**TABLE 4**  
**Autonomy Given to Divisions Placed in the Different Scenarios**

	Scenarios			One-way ANOVA		Duncan's
	4 (n = 19)	1, 2, 3, 5, 7, 8 (n = 97)	6 (n = 20)	F value	Sig. F	test *
<b>STRATEGIC</b> mean (s.d.)	5.76 (1.08)	5.02 (1.15)	4.23 (1.18)	8.738	.000	4 > (1, 2, 3, 5, 7, 8) (1, 2, 3, 5, 7, 8) > 6 4 > 6
<b>OPERATE</b> mean (s.d.)	6.57 (.74)	6.17 (1.07)	5.61 (1.09)	4.252	.016	(1, 2, 3, 5, 7, 8) > 6 4 > 6
<b>FINANCIAL</b> mean (s.d.)	5.79 (1.34)	4.84 (1.75)	3.97 (1.62)	5.716	.004	4 > (1, 2, 3, 5, 7, 8) (1, 2, 3, 5, 7, 8) > 6 4 > 6
<b>OVERALL</b> mean (s.d.)	6.04 (.96)	5.34 (1.19)	4.60 (1.07)	7.707	.001	4 > (1, 2, 3, 5, 7, 8) (1, 2, 3, 5, 7, 8) > 6 4 > 6

\* : Relations shown here are those with statistical significance at the  $p < 0.05$  level.

**TABLE 5**  
**Managing Strategic Ambiguity: Divisional Autonomy and Performance**

Method	Classification #	Performance mean (s.d.)	<i>t</i> - values
A	Appropriate autonomy (n = 13)	4.59 (.92)	1.72 *
	All others (n = 84)	4.18 (.78)	
B	Appropriate autonomy (n = 14)	4.57 (.89)	1.68 *
	All others (n = 83)	4,18 (.78)	
C	Appropriate autonomy (n = 3)	4.48 (1.09)	.52
	All others (n = 94)	4.23 (.80)	
D	Appropriate autonomy (n = 0)	--	--
	All others (n = 97)		

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

# : The number of divisions with appropriate autonomy which our four methods produce are quite consistent with probability rules. For method A, the probability for a division to show appropriate autonomy is  $0.5 \times 0.5 \times 0.5 = 0.125$  (i.e. low STRATEGIC and high OPERATE and low FINANCIAL). The same is true for method B. For method C, the probability becomes 0.037 ( $0.333 \times 0.333 \times 0.333$ ), while for method D, the probability is 0.0156 ( $0.25 \times 0.25 \times 0.25$ ).

**TABLE 6**  
**Structural Autonomy to Divisions and Performance**

Method	Classification #	Performance mean (s.d.)	<i>t</i> - values
A	Low structural autonomy (n = 48)	4.33 (.73)	1.10
	All others (n = 49)	4.15 (.87)	
B	Low structural autonomy (n = 32)	4.42 (.76)	1.64 *
	All others (n = 65)	4.14 (.82)	
C	Low structural autonomy (n = 24)	4.54 (.81)	2.22 **
	All others (n = 73)	4.13 (.78)	

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

# : The number of divisions with low structural autonomy (SF/O) which our three methods produce are also quite consistent with probability rules. For method A, the probability for a division to show low SF/O is 0.5. For method B, the probability becomes 0.333, and for method C, the probability is 0.25.

**TABLE 7****Performance Comparison between Divisions with High Shared Values and All Others**

Method	Classification	Performance mean (s.d.)	<i>t</i> - value
A	High shared values (n = 49)	4.367 (.82)	1.67 *
	All others (n = 48)	4.099 (.77)	
B	High shared values (n = 47)	4.381 (.84)	1.76 *
	All others (n = 50)	4.098 (.76)	
C	High shared values (n = 31)	4.439 (.88)	1.73 *
	All others (n = 66)	4.139 (.75)	
D	High shared values (n = 24)	4.521 (.88)	2.04 **
	All others (n = 73)	4.141 (.76)	

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

**TABLE 8**  
**Performance Comparison between Divisions with Low and High Levels of Communication,**  
**Transfer of Managers and Training Programs.**

	Classification	Performance mean (s.d.)	<i>t</i> - value
Communication	High level (n = 65 )	4.361 (.72)	2.52**
	All others (n = 32)	3.934 (.89)	
Transfer of managers	High level (n = 51)	4.352 (.75)	1.70 *
	All others (n = 46)	4.078 (.84)	
Training programs	High level (n = 67)	4.353 (.70)	2.49**
	All others (n = 30)	3.923 (.93)	

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .