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Chin-Shien Lin, Tzu-Ju Ann Peng, Ruei-Yuan Chang, Van Thac Dang,

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Chin-Shien Lin
Department of Business Administration, College of Management, National Chung Hsing University, Taichung, Taiwan
Tzu-Ju Ann Peng
Department of Business Administration, National Chengchi University, Taipei, Taiwan
Ruei-Yuan Chang
Department of Finance, Providence University, Taichung, Taiwan, and
Van Thac Dang
Department of Business Administration, College of Management, National Chung Hsing University, Taichung, Taiwan

Abstract

Purpose – The purpose of this paper is to reveal the strategic change-related issues by examining the dynamics between external fit and internal fit, as the success of strategic change is involved in the consideration of both internal and external fit.

Design/methodology/approach – This paper uses regression analysis to analyze the panel data from the electronics companies in Taiwan's stock market between 2004 and 2011.

Findings – The empirical results show that there is a relationship between internal fit and external fit, and the momentum of internal fit was found as well. Moreover, the impact of the interaction effect of external and internal fit on performance is moderated by external fit.

Originality/value – This research contributes to and extends the current research in both theoretical and practical ways. From a theoretical aspect, this paper considers internal fit and external fit simultaneously and has adopted the profile deviation approach to test their impacts on performance. From a practical aspect, the empirical results have derived implications for managers as to understand the dynamics such as trade-off, momentum and synergy between the two types of strategic fit, which may be helpful for making decision on strategy change.

Keywords Firm performance, Momentum, External fit, Inertia, Internal fit, Profile deviation

Paper type Research paper

Introduction

The concept of strategic fit has long been an important theoretical paradigm in the organization and strategic management field (Aldrich, 1979; Fry and Smith, 1987; Siggelkow, 2001; Van de Ven and Drazin, 1985; Venkatraman and Camillus, 1984; Zajac *et al.*, 2000). Prior studies have widely discussed the fit between and among environment, strategy, structure, process and performance (Galbraith, 1973; Luo and Park, 2001; Miles and Snow, 1994; Miller, 1992; Venkatraman and Camillus, 1984). Due

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to the complexity of external fit between environment and strategy and internal fit between resource and strategy, scholars have separately examined the effects of external fit and internal fit on performance. On one hand, the structure-conduct-performance paradigm (SCP) (Bain, 1956) and the industry structure model (Porter, 1980) view external environment as a key determinant of strategy and performance. Previous studies in this vein examined the effect of external fit (Covin and Slevin, 1989; Miller and Friesen, 1983; Prescott, 1986; Venkatraman and Prescott, 1990). However, these models have been criticized for ignoring the inner context of strategy (Pettigrew, 1987; Teece, 1984).

On the other hand, the structure-structure-performance paradigm (SSP) (Chandler, 1962) and the resource-based view (RBV) (Barney, 1991; Wernerfelt, 1984) consider internal attributes that affect strategy and performance. Some scholars have studied the effect of internal fit between strategy and organizational structure and resources on performance (Beleska-Spasova *et al.*, 2012; Chandler, 1962; Conant *et al.*, 1990; Hughes and Morgan, 2008; McDaniel and Kolari, 1987). Inevitably, these perspectives have been criticized for not paying attention to external competition.

By integrating both internal fit and external fit, Venkatraman and Camillus (1984) classified fit into three types: external fit, internal fit and integrated fit. Parthasarthy and Sethi (1993) explored both external and internal fits. Hoskisson *et al.* (1999) analyzed the theoretical and methodological evolution in strategic management, addressing the swings of a pendulum between inside viewpoint (internal fit) and outside viewpoint (external fit). Siggelkow's (2001) framework illustrated how firms react to environment changes by choosing different combination of external fit and internal fit. Moreover, Farjoun (2002) proposed an integrative theoretical model (i.e. "organization-environment-strategy-performance"), which incorporates both internal and external fits. Therefore, the success of strategy is involved in the consideration of both internal fit and external fit. However, some key questions have remained unanswered. What is the relationship between internal fit and external fit? Whether there exists a momentum in internal fit? When does the interaction effect of internal fit and external fit affect performance?

The contribution of this study is twofold. First, this study aims at depicting the dynamics between external fit and internal fit. Zajac *et al.* (2000) proposed the offset effect between internal fit and external fit. Their emphasis on both environmental and organizational contingencies indicate that although the alignment between environmental contingency and strategy is significant, in some circumstances, factors internal to organization may also play a significant role. However, practically, while detecting environmental changes, a firm with tightly coupled organization may have difficulty in adapting to such changes (Levinthal, 1997) or it may hesitate to change due to its successful experience from the previous internal fit, resulting in strategic rigidity. In other words, the higher the internal fit, the more likely a firm is unwilling to disrupt the status quo, leading to the deterioration of external fit in the next period. Moreover, external and internal fit somewhat represent a firm's competence, which is something that cannot be generated or eliminated in a short period of time. Therefore, the momentum of internal fit and the relationship between external fit and internal fit might exist. However, previous studies have paid less attention to this issue.

Second, this study aims at investigating when the synergy between internal fit and external fit may together work well to generate better performance. Internal fit can lead

to a sustainable competitive advantage because it makes imitation difficult (Rivkin, 2000). However, the implication of internal fit for competitive advantages varies based on whether environmental changes are stable or turbulent. Environmental changes can affect both internal and external fits that further lead to the change of "performance landscape" (Siggelkow, 2001). As scholars (Farjoun, 2002; Hoskisson *et al.*, 1999; Parthasarthy and Sethi, 1993; Venkatraman and Camillus, 1984) all emphasized, it is important to reveal the relationship between fit and performance by aggregately looking at both external fit and internal fit. However, less attention has been paid to examine the interaction effect of internal fit and external fit and when the interaction effect can generate better performance.

To address the above issues, this study selects the panel data from the electronics companies in Taiwan's stock market as the subject of analysis. This research differs itself from prior research in the following aspects:

- this study explores the relationship between internal fit and external fit;
- this study examines the momentum of internal fit; and
- this research adopts the panel data analysis rather than the cross-sectional technique to explore the contingency relationship between the interaction effect of internal and external fit and performance, circumventing the risk of model bias associated with cross-sectional studies.

The rest of the paper is structured as follows. The next section reviews previous literature and develops hypotheses. The third section describes the data collection and methodology. The fourth section presents the empirical results. The paper concludes with a discussion of the findings and implications.

Literature review and hypotheses

Prior literature on external fit and internal fit

One of the core aspect in strategic management is to understand the contingency relationship between business strategy and performance (Zott and Amit, 2008). The main factor affecting performance is the strategic fit rather than the strategy itself. In other words, there is no single best strategy suited for all scenarios. Every organization needs to stipulate its strategy depending on its scenario (Galbraith, 1973). A better performance can be achieved only when the strategy effectively responds to its external and internal requirements (Venkatraman and Prescott, 1990). In other words, strategic fit, achieved through the co-alignment among the external environment, internal resources and strategy variables, can lead to better performance.

External fit. The importance of the external environment lies in its considerable influence on the fate of an entire industry and on each individual entity (Miller and Dess, 1983). Prior studies indicated some variables reflecting external environment such as industry structure (Porter, 1980, 1985), competitive position (Hedley, 1977), environmental resource munificence (Wiersema and Bantel, 1993), industry life cycle (Craighill and Powell, 1996) and environmental uncertainty (Bergeron *et al.*, 2001). The SCP paradigm's main theoretical foundation originates from the concept of industrial organization (IO) (Hawawini *et al.*, 2003) and the thrust is that the main performance influencing factor is an industry's structural characteristics (Porter, 1980, 1985). Thus, the core concept of the SCP paradigm is: an organization's performance is influenced by an industry environment in which it resides – the industry's structure influences

organizational behavior (behavior refers to the response to the industry environment), which then influences performance. If an organization does not produce a responsive behavior, an industry's structure may negatively affect its performance (Porter, 1980, 1985). This paradigm not only describes an industry's competitive structure but also firmly establishes that an organization develop an appropriate competitive behavior (strategy) to obtain a model that produces better performance (Hoskisson *et al.*, 1999). Moreover, the position of a company in the market structure of the industry determines its profitability. With an appropriate industry position, a company can enjoy sustainable profits (McGahan and Porter, 1997).

Other important themes of external fit related to the resource dependency theory and industry life cycles. The resource dependency theory assumes that rare and critical resources for an organization's survival exist in the environment. Normally, organizations must rely on the resources provided in the environment for them to survive and to grow (Pfeffer and Salancik, 1978; Wiersema and Bantel, 1993). The industry life cycle perspective argues that strategies for achieving competitive advantage can differ significantly, depending on the stage of the life cycle at which a firm is in (Craighill and Powell, 1996; Robinson and McDougall, 2001).

In addition, environmental uncertainty is considered a critical contingency affecting the strategy and performance. Thompson (1967) recognized that environmental uncertainty is the basic problem an organization's top management must overcome. Milliken (1987) proposed three reasons explaining why performance is hindered by environmental uncertainty. First, organizations are unable to know the possibility for a future event to happen (Pfeffer and Salancik, 1978), second, organizations may lack of related information on cause-effect relationships (Lawrence and Lorsch, 1967) and, third, organizations are incapable of accurately predicting the possible outcomes of a decision (Downey *et al.*, 1975). Therefore, organizations may take actions to reduce the impact caused by environmental uncertainty.

Internal fit. Internal fit emphasizes the co-alignment between strategy and organizational variables. Earlier discussions of internal fit are centered on the fit between strategy and structure. Later on, the discussions widen to include the fit between strategy and other important organizational variables, such as the bonus system (Norburn and Miller, 1981), organizational culture (Scholz, 1987; Schwartz and Davis, 1981), organizational climate (Burton *et al.*, 2004), strategic resources (Hughes and Morgan, 2008) and organizational competence (Black and Boal, 1994; Conant *et al.*, 1990; McDaniel and Kolari, 1987; Shortell and Zajac, 1990; Zajac *et al.*, 2000). As for the theories of fit between strategy, resources and performance, RBV serves as the main theoretical basis. This view describes the role resources played in an organization's growth process (Penrose, 1959). An organization is regarded as the synthesis of a collection of resources, in which its strategic decision will be based on the type of resource it owns; hence, selecting the optimal strategic choice/alternative (Penrose, 1959).

The RBV claims that the performance differences among companies come mainly from the different competitive advantages due to the bundle of valuable, rare, inimitable and non-substitutable (VRIN) strategic resources at a company's disposal (Barney, 1991; Wernerfelt, 1984). With the difficulty in circulating resources among organizations within an industry, a firm can possess the capabilities to engage in considerable differentiation that may build resource position barriers not only to deter the entry of

other competitors but also to derive the extra rate of return (Wernerfelt, 1984). Consequently, a firm's competitive advantage originates from its better disposition of each of its resources and the efficient use of each resource (Mehra, 1996). According to this, if a firm aims for superior profit performance and long-lasting advantage construction, it should deploy, to the best of its ability, the time in which it monopolizes any strategic industry element and, to solidify an organization's resource position, it should continuously innovate.

Prior literature has provided abundant of evidences on the effects of external fit and internal fit on firm performance (Fry and Smith, 1987; Miller, 1996; Van de Ven and Drazin, 1985; Venkatraman, 1989; Zajac *et al.*, 2000). However, none of the previous studies have dealt with the dynamics between external fit and internal fit. This research gap has created a lack of adequate theoretical foundation in the strategic fit theory. In this study, the concept "dynamics of external fit and external fit" represents different meanings. First, it implies the relationship between internal fit in the current period and external fit in the next period. Second, it represents the interrelationship between internal fit through different time periods. Third, it indicates the interaction between internal fit and external fit in the same period of time. Therefore, the present study explores the dynamics between external fit and internal fit in the following sections.

Relationship between internal fit and external fit

While formulating strategy, a firm needs to consider both the environmental requirements and the available resources, and thus it is not an easy task to make a good strategy (Barney, 1991; McGee and Thomas, 1986; Spanos and Lioukas, 2001). Zajac *et al.*, (2000) proposed the offset effect between internal fit and external fit. They argue that despite the alignment between environmental contingency and strategy is significant, in some circumstances, factors internal to organization may also play a significant role that can offset external pressures. Siggelkow (2001) indicates that inertia forces lead firms along a process of convergence to a specific configuration of strategic position and organizational form, which in turn may cause organizations to fail to reach external fit. First, a firm is regarded as a system of interconnected choices with respect to activities, policies, structures, capabilities and resources. Although internal fit among choices can lead to a sustainable competitive advantage because it makes imitation difficult, the tight fit of such choices may have difficulty adapting to environmental changes (Levinthal, 1997). Second, managers are thought of as having mental maps that influence both the information they perceived and the way they process. Therefore, psychological status of senior management may weaken the organization's adaptation to environmental changes. Particularly, past success reinforces mental maps and eventually leads to a reduction in information processing (Miller, 1992) and a heightened belief that environmental changes are not going to affect an organization negatively (Milliken, 1987). Moreover, strong organizational identification has been found to increase belief in an organization's relative invulnerability to environmental changes (Miller and Friesen, 1983; Milliken, 1987). Third, well deployment of current resources may reduce the perceived need to change (Milliken and Lant, 1991). When all the strategic resources have been allocated in an optimal way that can effectively implement a particular strategy (i.e. internal fit), an organization may be fallen into a competency trap (Levinthal, 1997) that leads to unwillingness to adjust its strategy to pursue external fit (Miller, 1992). Therefore, it is possible to have a trade-off relationship

between internal and external fit when internal fit becomes a main obstacle to a company's strategy change, leading to external misfit in the subsequent period. We propose the following hypothesis:

H1. The higher the internal fit, the lower the external fit in the next period.

Momentum of internal fit

Internal fit indicates the alignment between organization variables and strategies, which usually takes some time to reach. Tight fit with interconnected choices in an organization represent a status in which every element can find its place and work well with the others. Such status is accumulated through time and cannot be generated or eliminated in a short period of time. In addition, the stronger the degree of interaction among a particular set of resources and activities, the higher the performance penalties for misalignment due to the costs of changing activities is higher (Siggelkow, 2001). Lastly, senior managers wallowed in past success reinforce stronger internal fit in the next period because they believe that the drawbacks of internal misfit may be greater than the benefits potentially generated from changing interconnected choices. Therefore, we propose the following hypothesis:

H2. The higher the internal fit, the higher the internal fit in the next period.

Interaction between internal fit and external fit and its effect on performance

As stated by Venkatraman and Camillus (1984):

> The field of business policy – its early strategic paradigm (Schendel and Hofer, 1979, p. 8) – is based on the matching or aligning of an organization's resources with the threats and opportunities in the environment (Chandler, 1962).

Zajac *et al.* (2000) also indicated that "fit" related arguments originate from contingency perspectives (i.e. situational theory). As both internal fit and external fit play their important roles on performance, under what circumstances do these two types of fit interact together to further affect performance?

Scholars have recognized that environmental changes can be thought of as changing the performance landscape. Once a firm adjusts its strategy to respond to the environmental changes, the internal fit will also change accordingly. That is, environmental changes can affect both external and internal fits. However, the pertinent decision is whether and how to change strategy while encountering with environmental changes. Siggelkow (2001) proposed a framework to describe the effect of environmental change, in terms of the extent to which external fit and internal fit are high or low (Scenarios 1-4 in the following). The question is how do firms make strategy changes under these different scenarios? Whether change to fit with external environments or change to fit with internal resources? Which type of fit is more critical?

When environmental change affect both external and internal fit, the firm finds itself with *fit-destroying* change where both external and internal fit are low (*Scenario 1*), or where internal fit is low but external fit is high (*Scenario 2*). In Scenario 1, the firm is stuck in a trough of the performance landscape, firm might either change its strategy to increase external fit or reallocate its resources to increase its internal fit to climb away from the trough. But which direction is more effective? In Scenario 2, would it be more effective for firms to focus on improving the internal fit rather than keep on pursuing the

external fit? Or the impacts on performance of both external fit and internal fit are the same?

In the case of *fit-conserving* change where external fit is low but internal fit is high (*Scenario 3*), a firm is getting away from the peak of performance landscape and the company may be eliminated by the market in the worst case scenario if it does not adjust its strategy. Conceptually, a firm has to make strategy changes to increase external fit. However, the environmental change could have left the internal system intact, even though the performance has declined. No obvious external misfits can be detected because the internal logic of the old system remains intact (Siggelkow, 2001). Even when the external misfits is detected, a firm with higher internal fit may not change fast due to the inertia from behavioral blind spots (Zajac and Bazerman, 1991), structural rigidity, competency trap (Levinthal, 1997) and senior managers' mental maps (Milliken and Lant, 1991). In this case, as it is difficult to increase external fit, is it possible to increase the performance through increasing internal fit rather than external fit?

In *Scenario 4,* where both internal fit and external fit are high, the environmental change has no relevance; therefore, firms may benefit more from having no strategy change at all. But what if a company wants to improve its performance? Does it make any difference if internal fit or external fit is improved?

Assuming that external fit refers to the alignment between provided products and customers' needs, internal fit presents as production efficiency to make such products. *Scenario 1* demonstrates that the provided products are not accepted by the customers and the production efficiency is low. *Scenario 2* indicates that the provided products fit with customers' need, but the production efficiency is still low. *Scenario 3* presents as high internal efficiency, but the provided products do not fit with customers' needs (*fit-conserving*). *Scenario 4* (both external fit and internal fit are high) is of course the best status. Under *Scenarios* 1 and 3 with low external fit, will the improvement of internal production efficiency result in better performance? As improving production efficiency does not guarantee the acceptance of provided products in the customer market, the improvement of efficiency may result in more inventories in stock and the increase of costs. On the contrary, under *Scenarios 2* and 4 with high external fit, when the provided products has been accepted by customers, improving the internal efficiency, either by decreasing costs or by increasing quality, will attract more customers, thus resulting in better performance. With decreasing costs and increasing quality, not only can the rate of investment be improved but the sales can also be increased, consequently, creating the synergy phenomena of internal and external fit. Therefore, the synergy between external fit and internal fit happens only when external fit is high.

In sum, the impact of the interaction effect of external and internal fit on performance is moderated by external fit. When external fit is high, the interaction effect will positively affect performance, implying that the impact of internal fit on performance can be enhanced. On the other hand, when the external fit is low, the impact of interaction effect on performance can even become negative, implying that the impact of internal fit may be lessened. Thus, we thus propose the following hypotheses:

H3. When external fit is high, the interaction effect of internal fit and external fit will positively affect performance.

H4. When external fit is low, the interaction effect of internal fit and external fit will negatively affect performance.

Methodology

Operationalization of variables

Financial performance. Financial performance has been commonly used as the major measurement of company performance in strategic management-related fields. Though it has been criticized by some (Aaker and Jacobson, 1987), due to its direct linkage to strategy implementation, financial performance is still used to measure company performance in this study. Three ratios – return on asset, return on equity and return on sales (ROS) – are used to indicate a firm's business performance (Burton *et al.*, 2004; Raymond and Bergeron, 2008; Zajac *et al.*, 2000). These three variables are standardized first, and then added up and divided by three to calculate the average. The higher the value is, the better a firm's business performance.

Business strategy. This research uses three variables to describe the strategy: low cost, marketing differentiation and technology differentiation (Spanos *et al.*, 2004). Low cost is measured by employee productivity, which is calculated by using the value added divided by employee number (Hambrick, 1983; Spanos *et al.*, 2004). The higher the employee productivity is, the lower is the cost. Marketing differentiation is measured by advertising intensity, which is calculated by using advertising expenses divided by sales. Technology differentiation is measured by research and development density, which is calculated by using R&D expenses divided by sales (Spanos *et al.*, 2004). The strategy discussed in this paper emphasizes the realized strategy rather than the intended strategy. According to Mintzberg (1978), a company's realized strategy can be observed through a series of activities or the resources allocated. All the measurements follow the approaches adopted by previous research (Berman *et al.*, 1999; David *et al.*, 2002; Geletkanycz and Hambrick, 1997; Kotha and Nair, 1995; Venkatraman, 1989).

Environment. Dess and Beard (1984) describe the environment by using three dimensions: munificence, dynamism and complexity. To some extent, environmental dynamism and environmental complexity represent the level of uncertainty a company faces, while environmental munificence represents the level of dependence of resources on the environment (Lumpkin and Dess, 2001). As environmental complexity and environmental dynamism are conceptually similar (Baum and Wally, 2003), only environmental munificence and environmental dynamism are discussed in the following.

Environmental munificence. This indicates the extent to which the environment can provide the resources that the companies need to grow (Wiersema and Bantel, 1993). This study refers to the approach proposed by Boyd (1990) and Keats and Hitt, (1988) and averaging the regression coefficients on the industry's net sales and operating income over a five-year period. The higher the value, the more munificent the environment.

Environmental dynamism. This represents the extent of change and unpredictability in an environment. Again using the approach proposed by Boyd (1990) and Keats and Hitt (1988), average the standard errors of regression coefficient of the above-mentioned function as a proxy for the environmental dynamism. The higher the value, the more dynamic the environment. These two dimensions, though derived from the same database, are independent of and will not influence each other (Heeley *et al.*, 2006).

Resources. In general, the resources within a company can be categorized into tangible and intangible assets. Intangible assets have become more important than tangible assets in deriving strategic advantages, especially in this knowledge economy

Construct	Variable	Operational definition
Human capital	Payroll expense ratio	Salary expense/net sales
	Average education degree	Employees are divided into Master's, college, and high school or below, with the weight of 3, 2, 1 and 0 for each category to compute average education degree of total employees
	Productivity per employee	Net sales/total number of employee
	Operating income per employee	Operating income/total number of employee
	Value added per employee	Net income after tax/total number of employee
Customer capital	Growth rate	Growth rate in sales
	Advertising expense	Advertising expense
	Marketing expense ratio	Marketing expense/net sales
	Acceptance rate	1 – (sales returns and allowances/net sales)
Innovation capital	Current R&D expense	Current R&D expense
	Last R&D expense	Last R&D expense
	Patent fee	Patent fee
	Current R&D density	R&D expense this year/net sales this year
	R&D intensity	R&D expense this year/average total assets
Process capital	Organizational stability	Employees' average work years/corporation age
	Current capital turnover	Net sales/average current assets
	Administrative expense ratio	Administrative expense/net sale
	Inventory turnover	Cost of goods sold/average inventory
	Fixed assets turnover	Net sales/average fixed assets
	Total assets turnover	Net sales/average total assets

Table I.
The definition of the intellectual capital indicators

(Teece *et al.*, 1997). In recent years, intellectual capital is considered as one of the most important components of intangible assets (Joia, 2000); therefore, this study measures resources by taking into account intellectual capital rather than other tangible resources. There are different ways to describe the contents of intellectual capital. Adopting the same structure proposed by Edvinsson and Malone (1997), this research classifies intellectual capitals into human, customer, innovation and process capitals. Human capital reflects the capability, experience, knowledge and skills of employees and managers. Customer capital is the interactive relationship between organization and customers, and is the most direct way to transform intellectual capital into money. Innovation capital is the innovation capability of a business, including patents, intellectual property and capacity to develop new products or new services. Process capital consists of the entire work process from input to output, including mainly the adoption of new techniques, and the efficiency of manufacturing products or providing services. The measurements of these capitals, based on the approaches used in previous research (Bontis, 1998; Deeds, 2001; Dzinknowski, 2000; Edvinsson and Malone, 1997; Johnson, 1999; Knight, 1999; Lee and Witteloostuijn, 1998; Mouritsen *et al.*, 2001a, 2001b; Stewart, 1997; Sveiby, 1997), are listed in Table I. Each capital is calculated by averaging all the standardized indicators belonging to it.

Operationalization of fit. Empirical measurement method of strategic fit can be divided into two approaches: reductionistic perspective and holistic perspective. The

reductionistic perspective only deals with bivariate fit among individual dimensions representing the constructs of environment, organizational resource and firm strategy (Venkatraman, 1989). Although this perspective has the ability to isolate precisely specified theoretical links and impacts, the use of pairwise fit between individual dimensions limits the ability to capture every aspects of a firm's strategic fit (Venkatraman, 1989). In contrast, the holistic perspective is a broader concept of strategic fit. This method considers simultaneously several elements of environment, organizational resource and strategy. One of the most advantages of this perspective is its ability to deal with complex and interrelated nature of linkages between every aspects of a firm (Venkatraman, 1989).

Venkatraman (1989) suggested that strategic fit as profile deviation (ideal configuration) is the most widely used method of the holistic perspective. This method represents the ideal configuration of many variables between strategy and environment and/or between strategy and organizational resources. In addition to the advantages of the holistic perspective, strategic fit as profile deviation can also generate quantitative values of strategic fit, which can be easier for determining the impact of strategic fit on firm performance (Venkatraman, 1989). Therefore, this study adopts the profile deviation approach to explore the relationship between strategic fit and performance as well as the relationship between external and internal fit. The procedure to conduct profile deviation consists of the following steps. First, all the variables of environment, strategy and resource are standardized (Vorhies and Morgan, 2003). Second, companies that perform in the top 10 per cent are selected. Third, a profile of the ideal configuration is drawn by calculating the average of all the variables of the selected companies to draw up. Fourth, calculate the Euclidean distance between the ideal configuration and each company based on the configuration variables in equation (1):

$$Dist_{s,t} = \sqrt{\sum_{j=1}^{m} (X_{sjt} - \overline{X_{ijt}})^2} \quad (1)$$

Where $Dist_{s,t}$ represents the misfit of company s at year t, i represents the group observation s belongs to, $\overline{X_{ijt}}$ represents the score of the ideal configuration of group i on variable j at year t, X_{sjt} represents the score of observation s on variable j at year t.

$Dist_{s,t}$ is multiplied by -1 to represent the measurement of fit, and the higher the value, the higher the fit. In other words, the closer the company gets to the ideal configuration, the better performance it can achieve.

When calculating external fit, the ideal strategic configuration is first determined for each specific environment. Then, the distance between the ideal strategy configuration and the strategy profile of each company is calculated. In the same vein, when calculating internal fit, the ideal resource configuration is determined first for each given strategy for each specific environment. Then, the distance between the ideal resource allocation and the resource allocation of each company is calculated.

Control variables. To control the potential confounding effects of other variables on the relationship between strategic fit and performance, this study controls the following variables. The company age, calculated by counting the number of years since a company's establishment, is controlled first. Also, because the scale of a company may

affect its capability to make profits, to lower capital costs and to reduce operation process risk, the sales are processed with natural logarithm and included in the equation as a proxy for the scale of business operations (Contractor and Kundu, 1998). In addition, Godfrey and Hill (1995) claim that previous financial performance can be used as a proxy for the unexplained, unobservable, heterogeneous competence. Many other studies have also used prior financial performance as a proxy for the unobservable factors that may impact performance (Jacobson, 1990; Szymanski *et al.*, 1993). Moreover, the inclusion of performance from the previous year as a control variable can reduce the risk of model estimation bias (Jacobson, 1990; Kotha and Nair, 1995). Therefore, prior performance is included as the third control variable in the equation in this study.

Sample and sources

Because the electronics industry in Taiwan plays an important role in the supply chain of electronic parts or electronic products in the world, this research collects data from electronic companies in Taiwan's stock market as the target of analysis. These companies, based on the classification of the Taiwan Stock Exchange, are categorized into eight sub-industries: semiconductor, computer and peripheral equipment, optoelectronics, electronic parts/components, electronic products distribution, communications and Internet, information service and other electronics. All the data are compiled from the database of *Taiwan Economic Journal* and the study period is between 2004 and 2011.

Empirical results

Table II shows the mean and variance of each variable. It also shows the Pearson correlations between the variables, ranging from −0.01 to 0.45. External fit and performance are strongly correlated ($r = 0.28$, $p < 0.01$), as are internal fit and performance ($r = 0.35, p < 0.01$), indicating that the higher the external fit or internal fit, the better the performance. The following results demonstrate how three research questions have been answered by testing four hypotheses.

Testing the impacts of internal fit and external fit on performance

Two panel data models with random effects are shown in Table III. Model 1 consists only of the control variables: age, size and previous performance. Model 2 adds in

	Variables	Mean	SD	1	2	3	4	5	6	7	8
1	Performance	0.02	0.82	1.00							
2	Firm age	20.39	8.41	−0.09**	1.00						
3	Firm size	14.80	1.57	0.17**	−0.07*	1.00					
4	Prior performance	0.04	0.79	0.29**	−0.09**	0.17**	1.00				
5	External fit	0.03	0.73	0.28**	0.14**	−0.08*	0.07*	1.00			
6	Internal fit	0.04	0.86	0.35**	0.09**	−0.26**	0.11**	0.45**	1.00		
7	Prior external fit	0.03	0.85	0.05	0.09**	−0.01	0.04	0.41**	0.05	1.00	
8	Prior internal fit	−0.02	0.91	0.01	−0.03	−0.08*	−0.01	−0.01	0.06	0.27**	1.00

Table II.
Correlation matrix, means and standard deviations

Notes: $*p < 0.05$; $**p < 0.01$

Independent variables	Model 1 β	Model 2 β
Intercept	−1.69***	−2.91***
Control variables		
Firm age	−0.01**	−0.02***
Firm size	0.13***	0.22***
Prior performance	0.09**	0.01
Independent variables		
External fit		0.23***
Internal fit		0.42***
External fit × internal fit		
External fit × internal fit × high external fit		
R^2	0.05	0.29

Notes: $p < +0.1$; $p < 0.05$*; $p < 0.01$**; $p < 0.001$***

Table III. The impacts of external fit, internal fit and their interaction term on performance

external and internal fit. It can be seen from Model 1 that the impact of age on performance is significantly negative ($\beta = -0.01$, $p < 0.01$) and the impact of size on performance is significantly positive ($\beta = 0.13$, $p < 0.001$). Such results are consistent across the models.

Considering the impacts of strategic fit on performance, it can be seen from Model 2 in Table III that both external and internal fit have significantly positive effects on performance. The impact of external fit on performance ($\beta = 0.23$, $p < 0.001$) indicates that as the level of external fit increases, the performance increases, provided that the other variables are controlled. In other words, there is an ideal strategy for a given environmental contingency. A firm will benefit from selecting the appropriate strategy in response to the environment. The closer the strategy is to the ideal one, the better the performance.

Similarly, the impact of internal fit on performance ($\beta = 0.42$, $p < 0.001$) indicates that as the level of internal fit increases, so does the performance of a firm, provided that the other variables are controlled. In other words, there is an ideal resource allocation for a given strategy. The closer the resource allocation is to the ideal configuration, the better the performance. Therefore, the results indicate the existence of ideal configuration of external fit and internal fit.

Testing the relationship between internal fit and external fit

Table IV shows that external fit can be affected by prior internal fit significantly ($\beta = -0.07$, $p < 0.001$), showing the relationship between internal fit and external fit. In other words, internal fit in prior period is detrimental to current external fit, providing support for *H1*.

Testing the momentum of internal fit

Table IV also shows that prior internal fit affects current internal fit as well. The impacts of prior internal fit on current internal fit ($\beta = 0.56$, $p < 0.001$) indicates that internal fit in prior period reinforces current internal fit, providing support for *H2*.

Independent variables	Model 5 External fit	Model 6 Internal fit
Intercept	−0.40	0.92***
Control variables		
Firm age	0.00	0.00
Firm size	0.02	−0.06***
Independent variables		
External fit		0.40***
Internal fit	0.34***	
Prior external fit	0.17***	−0.12***
Prior internal fit	−0.07**	0.56***
R^2	0.22	0.47

Notes: $p < +0.1$; $p < 0.05$ *; $p < 0.01$**; $p < 0.001$***

Table IV.
The phenomena of momentum and inertia effects of external and internal fit

Testing the interaction effect of external fit and internal fit on performance

This study tests the moderating effect of external fit to understand when the interaction effect of internal fit and external fit affect performance. We divided the observations into two groups, having firms with external fit above and below average. The dummy variable D is set to 1 when the external fit is above average and 0 when external fit is below average.

Table V shows the impact of the interaction term of external fit and internal fit on performance in Model 5 ($\beta = -0.10$, $p < 0.001$), indicating a negative effect between performance and the interaction term. That is, there is a deteriorating effect rather than a synergy effect on performance between internal and external fit for the whole data set. Similarly, in Model 6, the interaction term has a slope equal to -0.11, $p < 0.05$, indicating a negative impact of the interaction term on performance when external fit is low.

Independent variables	Model 5 β	Model 6 β
Intercept	−2.56***	−2.49***
Control variables		
Firm age	−0.02***	−0.01***
Firm size	0.20***	0.19***
Prior performance	0.04	0.05+
Independent variables		
External fit	0.19***	0.13***
Internal fit	0.14***	0.14**
External fit × internal fit	−0.10***	−0.11***
External fit × internal fit × high external fit		0.31*
R^2	0.33	0.34

Notes: *$p < +0.1$; $p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table V.
The impacts of external fit, internal fit and their interaction term on performance

However, the coefficient of D multiplied by the interaction term yields $\beta = 0.31$, $p < 0.001$, indicating that the impact of the interaction term changes to 0.2 (the sum of $\beta = 0.31$ and $\beta = -0.11$) when the external fit is high. The impacts of external fit, internal fit, and its interaction effect on performance are all positive when the level of external fit is high enough. The results support *H3* and *H4*, demonstrating that external fit plays significant moderating role. When the external fit is high, the interaction effect of internal fit and external fit will positively affect performance. However, when external fit is low, the interaction effect will negatively affect performance.

Discussions and conclusions

To understand the dynamics between internal and external fit, we propose that it is possible to have a relationship between internal and external fit when internal fit becomes a main obstacle to change, resulting in lower external fit in the subsequent period. This argument is based on the inertia forces due to tight interconnection choices (Siggelkow, 2001), structural and resource rigidity (Milliken and Lant, 1991), competency trap (Levinthal, 1997) and mental maps of senior managers (Miller, 1992). The empirical results support this argument, finding that the higher the internal fit, the lower the external fit in the next period. Furthermore, it is also possible to have momentum particularly for internal fit. High internal fit in a certain period may reinforce stronger internal fit in the subsequent period because the change of current interconnected choices may lead to the performance penalties for misfit (Siggelkow, 2001). The results of this study also support the momentum effect, demonstrating that a high internal fit is usually being maintained in the next period. Furthermore, how internal fit and external fit affects the performance could be different under different scenarios. The empirical results of this study indicate that the synergy can only be generated when the level of external fit is high. In contrast, when external fit is low, the interaction effect of both types of fits on performance is reduced.

Theoretical and managerial implications

Strategic fit has long been recognized to be important for performance. The success of strategy is involved in the consideration of both internal fit and external fit. As an extension to previous research on strategic fit, this research contributes to and extends current research in both theoretical and practical ways. From a theoretical aspect, this study considers internal fit and external fit simultaneously and adopted profile deviation approach (ideal configuration) to test their impacts on performance. We also address the dynamics between internal fit and external fit based on a longitudinal panel data rather than a cross-sectional data. From a practical aspect, the empirical results have derived implications for managers to understand the dynamics between two types of strategic fit, which may be helpful for making decision on strategy change.

The relationship between internal and external fit and the momentum of internal fit imply that a firm with high internal fit needs to be cautious about the change of strategic fit in the next period, particularly the external fit. While a firm changes its strategy, the external fit and internal fit will change accordingly. The important issue for managers is whether to pursue external fit or internal fit when assessing the potential impact on performance.

When the external fit is low, managers initiate the strategy change to increase higher internal fit, which may lead to deteriorated performance. Because higher internal fit

brings lower external fit in the next period, the interaction between internal fit and external fit emerged to offset with each other, resulting in even worse performance. On the other hand, when the level of external fit is high, the change of strategy to enhance internal fit may generate better performance. Because the increase of internal fit reinforces the internal fit in the next period, the higher internal fit interacts with high external fit, together creating the synergy to affect performance positively. Therefore, while initiating strategy change, what are the directions a manager can choose? To pursue external fit or internal fit? The findings from this study suggest that before the firm reaches an average level of external fit, it is better to pursue external fit over internal fit. Only after a firm's external fit hits above average, increasing internal fit can be an effective way to improve performance.

Limitations

This study is also limited in many ways and the need for further research remains. First, to explore the dynamics of strategic fit, longitudinal data are needed. Because it is difficult to conduct questionnaire survey to collect longitudinal data, we use a panel data. Inevitably, some measurements are not available. For example, the intellectual capital in this study was determined through extensive literature review combined with the availability of the variables in the database. Future research may adopt different methods to measure intellectual capital. Except for intellectual capital, organizational structure is another critical variable to test internal fit. However, the database does not include such variable. In addition, the strategy variables in this study mainly derived from Porter's competitive strategies (Porter, 1985), including low cost, technology differentiation and market differentiation. Product variety is not included because of its unavailability in the database. Future research may consider more variables if data collection is no longer a limitation.

Second, fit has long been examined as a singular concept. Venkatraman (1989) proposed six approaches to explore fit. Among these, this study adopts profile deviation to explore the dynamics between internal fit and external fit and their effects on performance. We suggest that future research may consider the perspective of fit as matching. It is potentially appropriate to explore this issue as well.

Third, this research focuses on the dynamic relationship between external fit and internal fit, but the issue of strategy change is not discussed. Future research may consider the issue of strategy change from the perspective of fit. Some interesting and important issues regarding strategy change. For example, to reach the balance between internal fit and external fit for creating better performance, when is the timing for managers to initiate strategic change? What are the strategies if change is needed? How to execute the change of strategies?

As long as strategic fit is widely discussed in the field of strategic management, this study uses a longitudinal panel data to explore the dynamics between internal fit and external fit. By testing four hypotheses, this study supports the argument that the relationship, momentum and synergy between internal fit and external fit may have impacts on performance. We discuss the findings and implications theoretically and practically. This study contributes a more complete exploration and explanation for strategic fit in both practice and research.

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Corresponding author

Ruei-Yuan Chang can be contacted at: greenstardeng84@yahoo.com