
Original Article

Determinants and performance effects of management consultancy adoption in listed Chinese companies

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Abstract As China seriously lacks trained and experienced personnel at its current stage of development, management consultancy may be adopted as an economical solution to improve efficiency and performance. However, as institutional theory suggests, it is likely that the adoption of management consultancy in China is driven more by mimetic isomorphism factors than by actual performance considerations. Using data from a survey of 219 listed Chinese firms, our results suggest that there are significant positive effects from mimetic isomorphism factors and adoption of management accounting and controls and information and communication technology. Our study provides strong evidence that the adoption of management consultancy has a positive effect on firm performance, yet we cannot conclude that management consultancy is adopted to improve firm performance. Moreover, state ownership held by state-owned enterprises (SOEs) has a significant and positive effect on management consultancy adoption, whereas state ownership held by government agencies does not. One interpretation is that firms controlled by SOEs have acquired increased autonomy and become more innovative.

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Introduction and Overview

Management consultancy, an independent professional advisory service, can be adopted to help managers and organizations resolve management and business problems, identify and seize new opportunities, enhance learning and implement changes (Kubr, 2002).¹ Although management consultancy has been regarded as a significant, growing and beneficial feature of modern organizations in the knowledge society, many companies in developed Western economies adopt it because it is fashionable (the ‘bandwagon effect’) rather than because it may enhance performance (Abrahamson, 1991; Bennett and Smith, 2004). In this study, we seek to shed light on the extent that Chinese companies adopt management consultancy, the types they adopt and the factors that motivate such adoption.

These issues are worth studying, as China is the largest emerging market in the global economy. Not only does it provide business and investment opportunities, it also provides abundant potential for management consultancy services. According to 51Consultant.com (2006), turnover in China’s consulting industry was less than RMB10 billion yuan (US\$1.25 billion²) in 2000, representing only about 0.11 per cent of China’s GDP in that year. It was also rather insignificant compared to turnover in the US management consultancy industry, which reached US\$30 billion by the mid-1990s (51Report.com, 2005) and had an effective demand amounting to US\$1.6 trillion in 2000 (Globrand.com, 2006). However, China’s management consultancy industry has begun to grow considerably in recent years. 51Report.com (2005) reported that 30.7 per cent of all companies (50.9 per cent among listed firms) had used consultancy services by the end of 2004. IBISWorld Industry Report of Global Management Consultants estimated that China’s management consultancy industry would generate approximately US\$29 billion in revenue and experience annualized growth of 11.6 per cent.

A second reason for this study is that China presents a rare opportunity to empirically examine opposing forces that may affect the adoption of management consultancy, for example, economic incentives versus mimetic pressures. China’s economic reform, which began in the early 1980s, has focused on marketizing state-owned enterprises (SOEs; Otchere and Zhang, 2001). This means that firms have become increasingly autonomous and have to rely on their own performance rather than state subsidies to survive increased market competition. In particular, in the 1990s, China introduced the so-called Modern Enterprise System, guided by the principles of clear property rights relations, separating government from enterprises and scientific management. The scientific management principle requires enterprises to adopt modern management ideas and techniques expected to improve performance. However, this movement has been hampered by a lack of sufficient trained or



experienced (or both) accounting and managerial personnel (Wang and Zhang, 2000). One way to overcome this is to form joint ventures with international companies, which can provide both the know-how and resources for transferring new management technology (Firth, 1996). However, not all Chinese companies are in a position to enter into a joint venture, and management consultancy can be an alternative source of assistance.

Although economic reform and marketization have provided scope for adopting management consultancy, many Chinese firms are still dominated by state ownership (Sun and Tong, 2003). This dominance may reduce their incentives or ability (or both) to adopt new management techniques, because state-owned or controlled firms have social and political objectives that make them less responsive and susceptible to economic forces and market competition (Chen *et al*, 2006). Moreover, being suddenly exposed to waves of new management techniques and systems, Chinese firms may feel considerable uncertainty about their effects. This uncertainty is compounded by other changes that firms may have to consider in responding to an increasingly competitive marketplace. Under such circumstances, some Chinese firms may engage management consultants to help them mimic earlier adopters, that is, the pressure of gaining legitimacy and belief in the benefits of management consultancy, rather than any proven results demonstrated by earlier adopters, may influence some companies to seek consultancy (Meyer and Rowan, 1977; DiMaggio and Powell, 1983; Powell and DiMaggio, 1991).

As data on Chinese firms' adoption of management consultancy were not readily available from public sources, we conducted a questionnaire survey of 219 listed Chinese companies. The survey data were supplemented by publicly available data on firm and industry characteristics. The data indicated that 66 per cent of our sample companies had used management consultancy services, 84 per cent of these using domestic and the remainder foreign consultants.³ We find that management consultancy adoption is positively related to the degrees of regional and industry mimetic pressure and firms' current use of management accounting and controls (MACs) and information and communication technology (ICT). Contrary to our expectations, adoption of management consultancy is positively (rather than negatively) associated with prior firm performance, suggesting that it was not intended to improve performance; there is, however, strong evidence that it helps improve performance. Moreover, state ownership by SOEs has a significant and positive effect on management consultancy adoption, although state ownership by government agencies such as central government ministries and commissions, or local government bureaux does not.⁴ One interpretation is that firms controlled by SOEs have acquired increased autonomy and become more innovative.



The rest of the article is organized as follows: the following section reviews related prior studies as the basis for hypothesis development in the subsequent section. As management consultancy is an important driver of innovation diffusion, we use innovation diffusion theory and institutional theory to formulate our hypotheses. The next following section describes our method, variables and data. The penultimate section presents the results, while the final section concludes the article with a summary and conclusions.

Literature review

A large body of literature has examined a variety of topics relating to management consultancy, such as the current state of the management consultancy industry and its international expansion (Kipping, 1999; Gross, 2004), the role of consultants and effect of consultancy adoption on client firms' performance (Soriano, 2003), the consultant–client relationship (McGivern, 1983), the selection and use of consultants (Bennett and Smith, 2004; Czerniawska, 2006), segmentation of the management consultancy industry (Czerniawska, 2005), and the influence of consulting firms' characteristics on the nature of consulting services provided (Maris and Meier, 1986).

The bulk of this research was conducted in the United States (Kipping, 1999) and Europe (Gross, 2004; Soriano, 2003; Bennett and Smith, 2004) and despite its richness few studies have addressed issues relating to the demand side of management consultancy. Bennett and Smith (2004) examine the selection of management consultants and their services by small businesses in Britain. They report that consultant choice is mainly determined by the intensity, cost and duration of consulting assignments, and is little influenced by the type of firm, type of consultants or field of the assignment. Another seldom studied aspect of consultancy is the determinants of management consultancy and role of MACs and information systems. Zander's (1997) study of Russia identifies three driving forces of consultancy adoption: the competition for financing, privatization and entrepreneurship. The author argues that consulting services are only useful in a stable economy with stable tax and finance policies. However, Bennett and Smith do not focus on determinants of management consultancy adoption, whereas Zander's study is based on personal reflection, rather than driven by theory or empirical work. Canbäck (1998, 1999) argues that the rise of transaction costs – such as external market transaction costs or internal bureaucratic (coordination) costs – in the knowledge economy is one of the determinants of management consultancy adoption. He suggests that the higher (less specific) the internal coordination costs (human asset specificity), the more efficient it is for companies to use management consultants.



Hypotheses development

The innovation diffusion literature suggests that management consultancy contributes to the spread of innovation in at least two ways. First, management consultants may play the role of fashion setters (Abrahamson, 1991), because they are often in a position to persuade companies to adopt a particular management tool. Second, they may function as change agents, which Rogers (1995, p. 27) has defined as external individuals who influence the client's innovation decisions in a direction they deem to be desirable. A change agent may be involved in the whole, or selected stages, of the innovation diffusion process. As consulting fees may be substantial, firm managers need to consider not only the desirability of the innovation, but also the economical feasibility of consultancy. In addition, managers need to take account of the opportunity cost of introducing and managing the proposed change and the disruption of existing practice after implementation.⁵ Below, we develop several hypotheses that take into account firms' economic incentives and social and environmental factors that might affect the adoption of management consultancy services.

Industry mimetic isomorphism

Institutional theory suggests that firms will adopt similar structures through a process called 'mimetic isomorphism' in response to uncertainty surrounding technology, ambiguous organizational goals, or to enhance organizational legitimacy (for example, Meyer and Rowan, 1977; DiMaggio and Powell, 1983; Powell and DiMaggio, 1991). DiMaggio and Powell argue that mimetic pressures from within a firm's industry could push the firm towards management consultancy. Moreover, innovation diffusion studies suggest that competitive pressures cause firms to adopt innovations as a way to maintain competitive position (for example, Iacovou *et al.*, 1995; Hall, 2004; Henisz *et al.*, 2005). As such, the adoption of management consultancy by counterparts, especially competitors, will create pressures to do likewise. In general, as the percentage of adopting firms in the industry increases, a firm will experience greater pressure to follow suit, particularly when technologies are unclear (Meyer and Rowan, 1977). Hence:

Hypothesis 1: Companies in industries with high management consultancy adoption rates are more likely to follow suit.

Regional diffusion network

Innovations also may spread through knowledge spillovers within or across geographic regions (Goolsbee and Klenow, 2002). Bandura (1977) suggests



that individuals learn by observing other people's activities and behaviour, whereas Rogers (1995) argues that the heart of the innovation diffusion process is the modelling and imitation of near-peers who have adopted a new idea. As it is relatively easier for companies to observe the activities of other companies in the same region, they are more likely to be influenced by the latter's practices. This innovation diffusion process is consistent with Abrahamson's (1991) 'fads perspective' or 'bandwagon effect'. This regional effect may also be affected by the availability of physical and knowledge resources. For example, some regions may have more business schools, R&D institutions and consulting firms to serve as change agents. These considerations lead to our second hypothesis:

Hypothesis 2: Companies in geographic regions with high management consultancy adoption rates are more likely to follow suit.

State ownership

A firm's ownership structure may affect its use of management consultancy, because different types of owners may have different objectives, management talents and skills, and types of social networks (Cuervo and Villalonga, 2000). In the case of Chinese business enterprises, it is widely known that state owners tend to emphasize political and social objectives over economic objectives (for example, Xu and Wang, 1997; Sun and Tong, 2003). Owing to this, companies with a large proportion of state ownership may be less motivated to adopt innovations, as managers would be under relatively greater pressure to attain objectives other than economic performance. Keeping their positions or moving up the bureaucratic hierarchy requires them to possess strong political skills, and their social networks would lean towards political circles and downplay access to, or knowledge of, innovations or change agents. In the case of SOEs, protection from the state, reinforced by risk aversion, would dampen managers' willingness to bear the risk of adopting innovatory management practices unless the state is the change agent. Thus, we hypothesize:

Hypothesis 3: A firm's propensity to adopt management consultancy decreases with its proportion of state ownership.

Current use of MACs and ICT

The concepts of 'fashion setter' and 'change agent' suggest that a positive relationship should exist between the use of management consultancy and that of MACs and ICT. Studies conducted both in the West (for example, Foster



and Swenson, 1997) and China (Firth, 1996; O'Connor *et al.*, 2004) have suggested that the use of consultants relates to MAC adoption. In addition, the operation of new management systems and techniques increasingly requires ICT support. Many recent MAC advances have been embedded within advanced ICT systems such as Enterprise Resource Planning (ERP) systems. However, up to now, there has been little empirical evidence to provide insight into the potential relationship between management consultancy adoption and MAC/ICT use. We argue that the use of MACs and ICT incentivizes firms to buy-in management consultancy services, for three reasons (Canbäck, 1998, 1999). First, there is high demand for human resources and knowledge for MAC and ICT adoption. Second, the uncertainty of implementing new MACs or ICT systems may be high. Third, organizations may incur high internal coordination costs and other transaction costs if they choose an in-house solution to implement MACs such as activity-based costing (ABC) or ICT such as ERP systems. Therefore, we expect that:

Hypothesis 4: Adoption of management consultancy services is positively associated with the use of MACs and ICT.

Firm performance

Firm performance can have a complex relationship with the propensity to adopt management consultancy. First, poorly performing firms are more likely to have incentives to evaluate and implement innovations to reduce a performance gap (Rogers, 1995). Second, the adoption of new management techniques, which in turn may induce greater adoption of management consultancy, provides an avenue to enhance performance (Hambrick and D'Aveni, 1988), implying that adopters will perform better than non-adopters. Thus, we have the following two hypotheses:

Hypothesis 5a: Prior-year firm performance is negatively associated with the adoption of management consultancy.

Hypothesis 5b: Adoption of management consultancy is positively related to contemporaneous or future firm performance.

Data and Method

Sample and procedures

Our data were mainly obtained through a questionnaire survey, supplemented with publicly available data. Our sample space included all listed companies in

seven areas of China (Guangdong, Fujian, Heilongjiang, Jiangsu, Shanxi, Sichuan and Tianjin), representing different levels of economic development. Questionnaires were sent to the chief accountant or financial controller of each of the 337 listed companies in these seven areas in the second half of 2004. E-mails were used in all areas except Shanxi, where less developed telecommunications called for the use of hard copies. Completed questionnaires numbered 230, of which 11 were discarded because of large numbers of missing or ‘no knowledge’ answers. Hence, the final sample consisted of 219 firms. The high response rate was made possible with assistance from the local offices of the China Securities Regulatory Commission (CSRC).⁶

We tested for non-response bias by comparing responding and non-responding firms on total assets, return on assets, return on sales, percentages of share ownership by the state, legal persons, foreign shareholders and the proportion of independent directors on the board of directors. There was no statistically significant difference (at $P=0.05$) between the two types of firm.

Models

To test the hypotheses, we adopted the following models:

$$\begin{aligned} \text{Consult} = & a_0 + a_1 \mathbf{Regress} + a_2 \mathbf{Indpress} \\ & + a_3 \mathbf{StateOwn} + a_4 \mathbf{Perform} \\ & + a_5 \mathbf{MACs/ICT} + a_6 \mathbf{Compt} \\ & + a_7 \mathbf{ForOwn} + a_8 \mathbf{Growth} \\ & + a_9 \mathbf{LnAsset} + e \end{aligned} \quad (1)$$

$$\begin{aligned} \text{Perform} = & \delta_1 + \delta_2 \mathbf{Consult} + \delta_4 \mathbf{StateOwn} \\ & + \delta_6 \mathbf{Gear} + \delta_7 \mathbf{Tang} + \delta_8 \mathbf{LnAsset} \\ & + \delta_9 \mathbf{Indust} + \varepsilon_4 \end{aligned} \quad (2)$$

Equation (1) is a logit model used to identify determinants of management consultancy adoption (Hypotheses 1–5a). Equation (2) is an ordinary least square regression model designed to test the effects of management consultancy on performance (Hypothesis 5b). As explained later, the two models will be used jointly in a two-stage least square (2SLS) procedure to deal with endogeneity between management consultancy adoption and firm



performance. The hypothesized variables are highlighted in bold in the two equations. The other variables are control variables. The measurement of all variables and reasons for their inclusion are explained below. Table 1 provides a summary of all variables and abbreviations used.

Table 1: Variables and abbreviations

<i>Variable abbreviation/notation</i>	<i>Explanation</i>	<i>Measurement</i>
ABC	Use of activity-based costing	Respondents indicate on a 1–5 scale
ABM	Use of activity-based management	Respondents indicate on a 1–5 scale
ABCM	Activity-based costing and management	ABC and ABM are loaded onto a subjective factor produced by a principal component analysis of MACs
Comp04	Composite firm performance in 2004	Average of subjective and objective firm performance in 2004
Comp05	Composite firm performance in 2005	Average of subjective and objective firm performance in 2005
Compt	Competition	Single subjective factor based on a principal component analysis of three aspects of market competition
Consult	Management consultancy	Coded as 1 if a firm had used management consultancy in the prior 3 years, and 0 otherwise
ForOwn	Foreign ownership	Proportion of a firm's equity owned by foreign shareholders
Gear	Leverage	Book value of debt divided by book value of total assets
Growth (TobinQ)	Growth opportunity	TobinQ (market value/book assets value)
ICT	Information and communication technology	Single subjective factor based on a principal component analysis of seven ICT activities
Indpress	Industry mimetic pressures	Percentage of management consultancy adopters for each industry
Indust	Industry membership	Coded as 1 if a firm belongs to a specific industry and 0 otherwise. Or coded as 1 if a firm is a manufacturing firm and 0 otherwise
LnAsset	Firm size	Natural log of a firm's total assets
MACs	Use of any of 15 management accounting controls techniques	Respondents indicate on a scale of 1–5

**Table 1** *continued*

<i>Variable abbreviation/notation</i>	<i>Explanation</i>	<i>Measurement</i>
MAC8	Use of eight management accounting controls techniques	Eight management accounting controls techniques: competitor analysis, target costing, <i>Kaizen</i> costing, value chain analysis budget management, EVA, integrated performance measures and performance-based management are loaded onto a subjective factor produced by a principal component analysis
MAC13	Use of any of 13 management accounting controls techniques, other than ABC or ABM	Thirteen management accounting techniques are loaded onto a subjective factor produced by a principal component analysis of MACs
Objper02	Firm performance in 2002	The average of OROA and OROS in 2002
Objper04	Firm performance in 2004	The average of OROA and OROS in 2004
Objper05	Firm performance in 2005	The average of OROA and OROS in 2005
OROA	Return on assets (objective firm performance measure)	Operating profits divided by average operating assets
OROS	Return on sales (objective firm performance measure)	Operating profits divided by sales
PreConsult	Probability of adopting management consultancy	Predicted variable obtained from a logit model using Regress and Indpress as instruments
Perform (Subjper)	Firm performance (subjective firm performance measure)	Single subjective factor based on a principal component analysis of seven components
Regress	Geographical regional pressures	Percentage of management consultancy adopters in each of the seven regions
StateGOV	State ownership held by government agencies	Proportion of firm equity owned by government agencies
StateOwn	State ownership	Proportion of firm equity owned by the state, which is the sum of StateGOV and StateSOE.
StateSOE	State ownership held by SOEs	Proportion of firm equity owned by the SOE
Tang	Tangibility to control for variations in input structure	Tangible assets divided by total assets



Test variables

Management consultancy (Consult): This is the dependent variable, coded 1 if a firm had used management consultancy in the previous 3 years, and 0 otherwise. Information on this variable was obtained from the questionnaire survey.

Geographic regional pressures (Regress): Following Forman (2005), we calculated the percentage of management consultancy adopters in each of the seven regions in our sample. The higher the regional adoption rate, the higher the pressure facing companies in that region.

Industry mimetic pressures (Indpress): Following Barth *et al* (1999), we calculated for each industry the percentage of management consultancy adopters. A higher ratio indicates a higher level of mimetic pressure facing firms in that industry.

State ownership (StateOwn): This is the proportion of a firm's total equity owned by the state, that is, ownership by state agencies (such as central government ministries and commissions), SOEs, or both. To be consistent with the timing of the survey data, the data were obtained from the sample firms' annual reports in 2004.

Firm performance (Perform): Firm performance was measured by asking respondents to rate seven aspects of their firm's performance within its industry (1 = 'far below average', 3 = 'about average' and 5 = 'far above average'): cost efficiency; customer satisfaction; employee morale, job satisfaction and commitment; on-time delivery to customers; innovativeness; continuous improvement and overall performance. A principal component analysis of the seven components yielded a single subjective factor with an eigenvalue of 3.841 and Cronbach's α equal to 0.857, indicating that the components are highly internally consistent and reliable (Nunnally, 1978).⁷ Although the subjective measure allows us to capture process performance and non-financial aspects, we are aware of its subjectivity and potential bias. We thus supplement it with two objective measures: operating profits as a proportion of both average assets and sales (operating return on total assets (OROA) and operating return on sales (OROS)). These measures are derived from the sample firms' publicly available financial reports. We also derive composite measures of firm performance by integrating subjective and objective measures.

Use of MACs: We limited our focus to 15 techniques generally held to benefit organizational performance, and that also require considerable knowledge, expertise and capacity to implement: cost-volume-profit analysis, ABC, activity-based management (ABM), quality cost reporting, competitor

analysis, value-chain analysis, standard costing, target costing, *Kaizen* costing, operating budgeting, discounted cash flow-based capital investment decision-making methods, Economic Value Added (EVA), responsibility accounting, integrated performance measurements and performance-based compensation. In the questionnaire survey, respondents were asked to indicate on a scale of 1 (= 'not at all') to 5 (= 'very extensively') the extent to which their companies currently employed each of these. A principal component analysis produced two factors: ABC and ABM are loaded onto the first factor (activity-based cost and management, ABCM) with an eigenvalue of 2.733 and Cronbach's $\alpha=0.92$, whereas the remaining 13 MACs are loaded onto the second factor (MAC13) with an eigenvalue of 4.868 and Cronbach's $\alpha=0.88$, indicating that the components are highly internally consistent and reliable.

Use of information and communication technology (ICT): Respondents were asked to indicate on a scale of 1 (= 'not at all') to 5 (= 'very extensively') the extent to which their companies currently use ICT for each of the following activities: data collection and analysis, product costing, decision making, planning and control, internal communications, external communications, and business processes. A principal component analysis of these seven items produced one factor with an eigenvalue=5.32 and Cronbach's $\alpha=0.95$, indicating that the components are highly internally consistent and reliable.

Control variables in Equation (1)

Competition (Compt): Both Firth (1996) and O'Connor *et al* (2004) find that increased market competition is a major motivator for Chinese SOEs to adopt advanced Western management accounting practices, which could in turn induce adoption of management consultancy. We asked respondents to indicate, on a scale of 1 (= 'negligible intensity') to 5 (= 'extremely intense'), the intensity of competition their firms faced in obtaining inputs, pricing, and product/service quality and features. A principle component analysis of the three items generates one factor with an eigenvalue of 1.76 and a reliability analysis shows a Cronbach's $\alpha=0.675$.

Foreign ownership (ForOwn): Foreign ownership facilitates access to international innovations and change agents (Firth, 1996; O'Connor *et al*, 2004). In addition to sharing their own prior experiences regarding the adoption of managerial innovations, foreign investors may require the deployment of particular innovations throughout their subsidiaries and joint ventures. Therefore, we expect foreign ownership to positively affect the adoption of management consultancy and MACs. ForOwn is the proportion of a firm's total equity owned by foreign shareholders. The data were obtained from the sample firms' 2004 annual reports.



Growth opportunities (TobinQ): Firms with greater growth opportunities are more likely to respond with higher aspirations for growth and thus more likely to need a consulting service. Tobin's Q (market value/book asset value) is used as a proxy for firms' growth opportunity, as it is one of the most widely used proxies (for example, Wright *et al.*, 1996; Xu and Wang, 1997).⁸ Although Tobin's Q has been shown to be theoretically and empirically linked to growth options (Cao *et al.*, 2008), we are aware of possible measurement error in Tobin's Q caused by the volatility of China's stock markets. Therefore, we also use sales growth as an alternative measure.

Firm size (LnAsset): The diffusion of innovation literature has consistently reported that innovativeness is positively related to organization size (Rogers, 1995) because of economies of scale, greater availability of slack resources, access to outside resources and the ability to bear adoption risks (Forman, 2005). Firm size is measured with the natural logarithm (to reduce skewness) of total assets at the end of 2004. Data for this variable were obtained from the companies' publicly available reports.

Control variables in Equation (2)

State Ownership (StateOwn): In China, lacklustre firm performance is often reported to be associated with a substantial level of state ownership, as the state tends to put more emphasis on political and social objectives than on profitability (for example, Sun and Tong, 2003; Xu and Wang, 1997). StateOwn is the proportion of equity shares owned by the state.⁹

Leverage (Gear): The avenues by which leverage can affect performance include increasing interest burden, magnifying business operating risk and providing tax shields. In the case of China, the government's longstanding practice of supporting unprofitable enterprises means that firms with higher leverage may be financially troubled, but it also can mean greater access to state funding for value-creating activities. We measured leverage as the book value of debt divided by the book value of total assets.

Tangibility (Tang): The ratio of a firm's tangible assets to total assets is included to control for variations in input structures that may affect capital structure and managerial decisions (Wiwattanakantang, 1999).¹⁰

Firm Size (LnAsset): We expect firm size to be negatively related to firm performance, because larger firms may suffer from more agency problems (Sun and Tong, 2003) and may attract more bureaucratic intervention and hence be less efficient than small firms in China (Xu and Wang, 1997). The natural log of total assets of a firm is used as a proxy for firm size.

Industry (Indust): Industry membership may also affect firm performance, as different industries may have different patterns of ownership, costs, revenues and profitability (Wei *et al*, 2005). On the basis of the companies' listing code on the stock exchange, we classified each sample company into a specific industry following the CSRC industry classification scheme. A firm was coded as 1 if it belonged to a specific industry and 0 otherwise. Alternatively, we classify the sample firms into manufacturing and non-manufacturing firms.

Results

Descriptive statistics

Questionnaire respondents were asked whether during the past 3 years their companies had used the services of a consulting firm, and if they had its national origin. Panel A of Table 2 shows a high rate of management consultancy adoption (66 per cent); 84 per cent had used domestic consultants and the remaining 16 per cent had used foreign consultants.

Not all respondents indicated the types of consultancy that their companies had sought. For those who did, Panel B of Table 2 shows their reported distribution of consulting topics. It can be seen that the most popular topics were in finance and investment (13.16 per cent), management methods and systems (11.84 per cent), strategy (11.84 per cent), adoption of ERP and information systems (IS) (10.53 per cent) and taxation (7.89 per cent). The popularity of finance and investment topics is consistent with the experience in Russia, where competition for finance created a high demand for consultancy (Zander, 1997). The high rating for strategy suggests that Chinese firms are devoting considerable attention to longer-term strategic (as compared to daily operating) issues. The high rating for ICT issues suggests that ICT has become an important part of Chinese firms' operations, perhaps because they have become intertwined with MACs and other management systems.

Panel C of Table 2 indicates that the mean regional and industry mimetic pressures were both 0.66, with the former ranging from 0.56 to 0.80 and the latter from 0.50 to 1.00. Both mean values are consistent with the high degree of consultancy use, while the ranges do suggest some difference across regions and industries. More details are given in Panels D and E, which show, respectively, the proportion of consultancy in each of the seven regions from where our sample companies were drawn, and in each of the 13 CSRC industry classifications.

The average adoption rates of ABCM, and the remaining 13 MACs (MAC13) and ICT were 2.85, 3.30 and 2.76, respectively, which seem relatively low. The average percentage of state ownership was 22.4 per cent (0–80 per cent),

**Table 2:** Descriptive statistics

	<i>Number</i>	<i>Percent</i>	<i>Variable value</i>	
<i>Panel A: Categorical variables</i>				
<i>Adoption of consultancy</i>				
No	74	33.9	0	
Yes	144	66.1	1	
Total	218	100	—	
<i>Consultant type</i>				
Domestic	118	83.7	0	
Foreign	23	16.3	1	
Total	141	100	—	
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<i>Topic</i>	<i>No</i>	<i>Percent</i>		
<i>Panel B: Types of consultancy topics</i>				
Finance and investment	10	13.16		
Management methods and systems	9	11.84		
Strategy	9	11.84		
ERP and IS	8	10.53		
Taxation	6	7.89		
HRM	4	5.26		
Reorganization	3	3.95		
Sales and promotions	3	3.95		
Other	24	31.58		
Total	76	100.00		
<hr/>				
	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>
<i>Panel C: Continuous variables</i>				
Regpress	218	0.660	0.667	0.063
Indpress	218	0.658	0.600	0.115
StateOwn	219	0.224	0.085	0.254
StateGOV	219	0.017	0.024	0.253
StateSOE	219	0.206	0.376	0.255
ABCM	219	2.848	3.000	1.153
MAC13	219	3.295	3.346	0.680
ICT	219	2.763	2.857	1.088
Compt	219	4.132	4.333	0.716
TobinQ	219	1.241	1.151	0.383
ForOwn	219	0.018	0.000	0.082
LnAsset	219	21.147	21.009	1.084
Gear	219	0.060	0.020	0.176
Tang	219	0.313	0.298	0.190

Table 2 *continued*

	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>
<i>Performance measures</i>				
Subjper	219	3.644	3.714	0.587
Objper02	191	0.019	0.024	0.063
Objper04	212	0.025	0.035	0.136
Objper05	210	-0.035	0.030	0.327
Comp04	219	0.008	0.026	0.262
Comp05	219	0.005	0.049	0.353
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<i>Region</i>	<i>No. of consultancy adopters (total: 144)</i>	<i>No. of companies (total: 218)</i>	<i>Index</i>	
<i>Panel D: Regional mimetic pressure</i>				
Haerbin	10	18	0.56	
Fujian	15	25	0.60	
Shenzhen	25	42	0.60	
Sichuan	32	48	0.67	
Tianjin	11	16	0.69	
Jiangsu	47	64	0.73	
Shanxi	4	5	0.80	
<hr/>				
<i>Industry</i>	<i>No. of consultancy adopters (total: 144)</i>	<i>No. of companies (total: 218)</i>	<i>Index</i>	
<i>Panel E: Industry mimetic pressure</i>				
Media and culture	1	2	0.50	
Comprehensive	7	14	0.50	
Manufacturing	75	125	0.60	
Financial and insurance	2	3	0.67	
Real properties	9	13	0.69	
Agriculture	3	4	0.75	
Information technology	15	20	0.75	
Wholesale and retail	10	13	0.77	
Social services	5	6	0.83	
Transport	9	10	0.90	
Mining	2	2	1.00	
Energy	4	4	1.00	
Construction	2	2	1.00	

whereas the average percentage of foreign ownership was 1.8 per cent (0–57 per cent). These statistics are comparable with those in prior studies (for example, Sun and Tong, 2003; Wei *et al*, 2005). The mean rating for competition was 4.13, which suggests that firms faced a relatively competitive environment. The average Tobin's Q was 1.24 (0.872 to 4.269), indicating that



the growth potential of the companies would be very varied. The sample firms had a total asset of about US\$0.75 billion.

The sample firms' average OROA in 2004 was 2.7 per cent, whereas the mean for OROS was 3.8 per cent. The average of OROA and OROS in 2004 was 2.5 per cent. The average subjective measure of performance was 3.644. The composite performance, derived from the average of standardized objective performance and standardized subjective performance, had an average value of 0.008, with a range of -0.971 to 1.070 .

We also conducted a correlation analysis of the variables. The untabulated results show that adoption of management consultancy is significantly and positively associated with regional mimetic pressure, industry mimetic pressure and ICT use ($r=0.14, 0.24, 0.18$, respectively, in all cases, $P<0.05$ or 0.01).¹¹ However, it is not significantly associated with either ABCM or ABC13. Although the absolute magnitudes of the correlations among the independent variables are not high enough to cause concern with multicollinearity, there are significant and positive correlation coefficients between MAC13 and ABCM ($r=0.41, P<0.01$) and between ICT and MAC13 ($r=0.44, P<0.01$). Thus, these variables are included in the logistic analysis separately.

Determinants of management consultancy adoption

Table 3 presents the results of logistic regressions with different specifications. Focusing on our hypothesized relationships, both regional mimetic pressure and industry mimetic pressure have a significant and positive association with the adoption of consultancy in every model, which is consistent with expectations based on institutional and innovation diffusion theory. As we suggested earlier, this mimetic behaviour could arise out of various forces, such as the need to overcome competition (Iacovou *et al*, 1995), unclear effects or consequence of the technology or management method (Meyer and Rowan, 1977), and knowledge spillover (Goolsbee and Klenow, 2002). However, the nature of our data does not allow us to pinpoint the exact reason(s).

Contrary to our hypothesis, Models 1–3 show that state ownership has a positive effect on adoption of consultancy. We investigated this issue further by distinguishing between state ownership by government agencies (StateGOV) and by SOEs (StateSOE).¹² Wang (2003) argues and provides supporting evidence that government agency shareholders are subject to a higher degree of political influence because of their being purely government agencies, whereas SOE shareholders have a greater degree of autonomy to pursue non-political objectives (for example, profits). In the case of management consultancy adoption, this implies that firms with proportionally greater government agency ownership will have fewer incentives to adopt consultancy than firms

Table 3: Logistic regression results: Determinants of management consultancy adoption

Variables (predicted sign)	Model 1		Model 2		Model 3		Model 4		Model 5	
	B	SE	B	SE	B	SE	B	SE	B	SE
<i>Test variables</i>										
Regress (+)	5.51**	2.76	4.58**	2.65	4.80**	2.66	5.04**	2.73	5.84**	2.77
Indpress ^a (+)	4.86**	1.77	4.59**	1.75	4.84***	1.75	4.94*	1.76	4.93***	1.76
StateOwn (-)	1.15**	0.68	1.07*	0.67	1.07**	0.67	—	—	—	—
StateGOV (-)	—	—	—	—	—	—	2.58	2.38	—	—
StateSOE (+)	—	—	—	—	—	—	—	—	0.93*	0.69
Objper02 (-)	2.84*	2.24	2.77	2.14	2.40	2.16	2.80*	2.22	2.58	2.22
ICT (+)	0.48***	0.17	—	—	—	—	0.47***	0.17	0.49***	0.17
ABCM (+)	—	—	0.14	0.15	—	—	—	—	—	—
MAC13 (+)	—	—	—	—	0.34*	0.26	—	—	—	—
<i>Control variables</i>										
Compt (+)	-0.09	0.24	-0.41	0.24	-0.04	0.24	-0.04	0.24	-0.11	0.24
TobinQ ^b (+)	0.04	0.47	0.05	0.46	0.13	0.47	0.05	0.47	0.02	0.47
ForOwn (+)	0.68	1.51	0.81	1.48	0.49	1.51	0.48	1.48	0.58	1.50
LnAsset (+)	-0.40	0.22	0.04	0.22	0.10	0.22	0.01	0.22	-0.05	0.22
Constant	-6.82	5.38	-6.82	5.30	-6.86	5.29	-7.35	5.34	-6.52	5.35
<i>Model Summary</i>										
χ^2	27.40***		19.17**		19.12**		25.85***		26.33***	
-2 Log likelihood	218.00		226.23		225.49		219.555		256.07	
Cox & Snell R^2	0.13		0.10		0.10		0.13		0.10	
Nagelkerke R^2	0.19		0.13		0.14		0.18		0.14	

^aDeleting observations in the three industries (energy, mining and construction) whose industry mimetic pressure index values are all 1 generates identical results.

^bReplacing Tobin's Q by average sales growth rate for 2002–2004 produces identical results.

*significant at 0.10 level; **significant at 0.05 level; ***significant at 0.01 level (one-tailed for directional tests and two-tailed for non-directional tests and constants).

Note: For variable definitions, see Table 1.

with proportionally more of their state shares held by state-owned corporations. These predictions are supported by the results in Models 4 and 5 of Table 3, where StateGOV has no significant effect, whereas StateSOE has a significant and positive effect ($B=0.93$, significant level = 0.09, one-tailed). Overall, this finding suggests that government-controlled firms appear to be indifferent to the adoption of management consultancy, whereas firms with a high level of ownership by SOEs are more likely to seek help from consultants, perhaps because they have more managerial autonomy or financial autonomy, or both.

The results in Table 3 indicate that all five coefficients between objective performance in 2002 (objper02) and use of management consultancy are



positive, although only two are statistically significant, at the level of 10 per cent. These results show that prior-year firm performance has some positive effects on listed Chinese firms' adoption of management consultancy, contrary to expectations. This suggests that poor prior-year performance does not motivate firms' adoption of consultancy. Instead, the better the prior firm performance, the more likely the adoption of management consultancy. One interpretation is that the adoption of management consultancy can confer 'bragging rights' for increasing the company's perceived prestige and inferred resourcefulness.

ICT use has a significant and positive association with management consultancy adoption (Models 1, 4 and 5), as does MAC13 adoption (Model 3). By contrast, none of the coefficients for ABCM is significant. As the two components of ABCM (ABC and ABM) are relatively new additions to the managerial toolkit, we also examined whether the use of consultancy was affected by the 'age' of MACs. We did this by forming out of MAC13 a new variable MAC8, which only included the eight MACs of relatively recent vintage: competitor analysis, target costing, *Kaizen* costing, value-chain analysis, budget management,¹³ EVA, integrated performance measures and performance-based compensation. The coefficient was still positive and significant ($B=0.34$, *significant level* = 0.09, *one-tailed*), although the level of significance decreased slightly. A point of caution in interpreting these results is that a positive relationship between management consultancy adoption and the use of ICT and MACs does not allow us to conclude that management consultancy leads to greater use of ICT and MACs, or *vice versa*.

Among the control variables, growth opportunities (Tobin's Q), competition, foreign ownership and firm size do not have significant correlations with management consultancy adoption. Results relating to Tobin's Q do not change when we replace Tobin's Q by sales growth between 2002 and 2004.

We also analyse the use of foreign versus domestic consultants as a dichotomous variable using logistic regressions. The same test variables and control variables are used as for the main test. The results show that foreign ownership has a significant and positive association with adoption of foreign consultants ($B=5.32$, *significant level* = 0.01, *one-tailed*), which is as one might expect. This is perhaps because foreign investors prefer the use of foreign consultants. The result also suggests that internationalization of Chinese enterprises does have an effect on adoption of foreign management consultants, even though foreign ownership is not a significant determinant of management consultancy adoption overall. In addition, firm size has a significant and positive association ($B=0.91$, *significant level* = 0.02, *one-tailed*) and ICT also has a positive and significant effect ($B=0.37$, *significant level* = 0.10, *one-tailed*). A point of caution in interpreting these results is that as sample companies each provided their response with respect to the consulting firm with the biggest



assignment, it is possible that firms under foreign ownership use domestic management consultants for smaller assignments as well.

The effects of management consultancy on firm performance

To test Hypothesis 5b, we ran two sets of models. Initially, firm performance measures (subjective, objective and composite performance indicators in 2004) were regressed on the raw variable on management consultancy adoption. The results are displayed in Panel A of Table 4. The first three models in the table do not control for prior firm performance. Management consultancy adoption is positively and significantly associated with both the subjective performance indicator and the composite performance proxy (statistically significant at 5 and 10 per cent, respectively). Again, in Models 4, 5 and 6 where *Objper02* (the average of *OROA* and *OROS* in 2002) is controlled for, management consultancy adoption is positively associated with both the subjective and composite measures of firm performance, statistically significant at 5 per cent in both cases. These results suggest that management consultancy adoption has a positive effect on firm performance.

To confirm these results, we ran two additional sets of tests. First, rather than use the raw variable of management consultancy adoption, we use an instrumental procedure, a 2SLS procedure. This helps us alleviate the endogeneity issue between management consultancy adoption and firm performance. Initially, we obtain a predicted variable (*PreConsult*, the probability of adopting management consultancy) by rerunning a logit model like those shown in Table 3, treating *Regress* (regional mimetic pressure) and *Indpress* (industrial mimetic pressure) as instruments. These variables have a positive and significant relationship with adoption of management consultancy, but are unlikely to be associated with firm performance. We also control for other variables that may affect management consultancy adoption, including state ownership, foreign ownership, firm size, industry, competition and growth. At the second stage, various firm performance variables are regressed on *PreConsult* while controlling for the standard variables (that is, state ownership, leverage, asset tangibility, firm size and industry membership) that have been argued or found to affect firm performance. The results of the second stage are displayed in Panel B of Table 4. The first three models do not control for prior firm performance, whereas the last three models do. However, all six models produce a consistent result: *PreConsult* is significantly and positively associated with the performance measures, confirming that management consultancy adoption has a positive performance effect.

The second sets of tests we ran involved the substitution of *objper04* (the objective measure of performance in 2004) by *objper05* (the objective measure



Table 4: Effects of consultancy on firm performance

	Model 1: Subjective Performance			Model 2: Objective Performance 2004 ^a			Model 3: Composite Performance 2004			Model 4: Subjective Performance			Model 5: Objective Performance 2004			Model 6: Composite Performance 2004		
	B	SE		B	SE		B	SE		B	SE		B	SE		B	SE	
<i>Panel A Models based on original consultancy variable</i>																		
Constant	0.42	0.78	-0.76***	0.20	—	—	-1.46***	0.35	—	—	0.46	0.95	—	—	0.22	—	—	—
Consult (+)	0.16**	0.08	0.02	0.02	0.05*	0.04	0.05*	0.04	0.16**	0.08	0.16**	0.08	0.01	0.02	0.06**	0.03	0.03	0.06
StateOwn (-)	0.18	0.15	0.01	0.04	0.05	0.07	0.05	0.07	0.25*	0.15	0.03	0.15	0.03	0.04	0.10**	0.06	0.06	0.06
Gear (?)	-0.07	0.22	-0.17***	0.05	-0.14	0.10	-0.14	0.10	0.02	0.21	-0.14***	0.21	-0.14***	0.05	0.05	-0.09	0.08	0.08
Tang (-)	-0.16	0.21	0.10**	0.05	-0.04	0.09	-0.04	0.09	-0.15	0.22	0.08**	0.22	0.08**	0.05	0.01	0.01	0.08	0.08
LnAsset (-)	0.13***	0.04	0.03***	0.01	0.06***	0.02	0.06***	0.02	0.13***	0.04	0.02*	0.04	0.02*	0.01	0.05***	0.02	0.02	0.02
Indust* (?)	0.23***	0.08	0.01	0.02	0.08**	0.04	0.08**	0.04	0.21***	0.08	0.00	0.08	0.00	0.02	0.07***	0.03	0.03	0.03
Objper02 (+)	—	—	—	—	—	—	—	—	1.96***	0.69	0.94***	0.69	0.94***	0.16	1.28***	0.27	0.27	0.27
<i>Model Summary</i>																		
Adj. R ²	0.08	—	—	0.09	0.07	—	0.07	—	0.16	—	0.26	—	0.26	—	0.26	—	0.26	—
df	6.00	—	—	6.00	6.00	—	6.00	—	7.00	—	7.00	—	7.00	—	7.00	—	7.00	—
F	4.20	—	—	4.61	3.79	—	3.79	—	6.09	—	10.40	—	10.40	—	10.22	—	10.22	—
Sig.	0.00	—	—	0.00	0.00	—	0.00	—	0.00	—	0.00	—	0.00	—	0.00	—	0.00	—



Table 4 continued

	Model 1: Subjective Performance		Model 2: Objective Performance 2004 ^a		Model 3: Composite Performance 2004		Model 4: Subjective Performance		Model 5: Objective Performance 2004		Model 6: Composite Performance 2004	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
<i>Panel B: Models based on predicted probability of adopting consultancy</i>												
Constant	-0.16	0.86	-0.73***	0.20	-1.77***	0.34	0.68	0.93	-0.34	0.21	-1.23***	0.36
PreConsult ^b (+)	0.78***	0.26	0.19***	0.06	0.39***	0.10	0.71***	0.26	0.18***	0.06	0.36***	0.10
StateOwn (-)	0.08	0.16	-0.02	0.04	0.01	0.06	0.16	0.16	0.00	0.04	0.05	0.06
Gear (?)	-0.08	0.22	-0.16***	0.05	-0.13	0.08	0.02	0.21	-0.14***	0.05	-0.09	0.08
Tang (-)	-0.12	0.21	0.09***	0.05	0.02	0.08	-0.21	0.22	0.07*	0.05	-0.02	0.08
LnAsset (-)	0.15***	0.04	0.03***	0.01	0.07***	0.02	0.11***	0.04	0.01	0.01	0.04***	0.02
Indust ^c (?)	0.28***	0.08	0.02	0.02	0.11***	0.03	0.27***	0.08	0.02	0.02	0.10***	0.03
Objper02 (+)	—	—	—	—	—	—	2.01***	0.68	0.93***	0.15	1.29***	0.26
<i>Model summary</i>												
Adj. R ²	0.12		0.13		0.17		0.18		0.29		0.29	
df	6.00		6.00		6.00		7.00		7.00		7.00	
F	5.76		6.32		8.12		6.72		12.21		12.09	
Sig.	0.00		0.00		0.00		0.00		0.00		0.00	

^aReplacing the objective measure of performance in 2004 (Objper04) by the objective measure of performance in 2005 (Objper05), and accordingly substituting Comp05 for Comp04, produces identical results.

^bReplacing PreConsult by predicted group membership denoting whether a company is in the group of management consultancy adopters generates the same results.

^cThe results for other variables hold when replacing the classification of firms into manufacturing and non-manufacturing firms by the CSRC classification.

*significant at 0.10 level; **significant at 0.05 level; ***significant at 0.01 level (one-tailed for directional tests and two-tailed for non-directional tests and constants).

Note: Variable definitions: PreConsult = predicted probability of adopting management consultancy. For definition of other variables, see Table 1.



of performance in 2005). This substitution is plausible because the 2004 objective performance measure is contemporaneous with consultancy adoption and thus could muddle the direction of causation between consultancy adoption and firm performance. The results from using Objper05 in rerunning all the models in Panels A and B of Table 4 produce identical results, consistent with Consult and PreConsult having a positive and significant effect on firm performance. Taken together, these results support H5b.

Summary and Conclusions

This study sought to ascertain whether management consultancy adoption is driven by mimetic pressures or by performance considerations. The results indicate that the adoption of management consultancy is positively related to degrees of both regional and industry mimetic pressures that companies face. In addition, it positively relates to adoption of MACs and ICT. These findings are generally consistent with our expectations based on institutional theory and innovation diffusion theory, as well as with earlier empirical studies that have shown consultancy use to be an important determinant of MAC adoption (for example, Firth, 1996; Foster and Swenson, 1997; O'Connor *et al*, 2004). We also find that state ownership by SOE shareholders has, whereas state ownership by government agencies does not have, a significant and positive effect on consultancy adoption. In light of other findings (for example, Wang, 2003) that the performance of firms with state ownership by government agencies is significantly lower than that of firms with SOE shareholders, this suggests that SOEs are more innovative managerially than firms controlled by government agencies, implying that the government should provide more managerial autonomy to corporate managers. An alternative interpretation is that, in an increasingly competitive market environment, managers of SOEs feel a greater need to buy-in external expertise than managers of firms controlled by government agencies, who are more politically motivated.¹⁴

Although adoption of management consultancy does not seem to be motivated by the need for improving poor firm performance, it is still 'comforting' for the stakeholders of these companies to know that consultancy adoption has a positive and significant effect on performance. Moreover, the results suggest that it is not necessarily a problem should a company adopt management consultancy because of regional and industrial mimetic pressures, if such an adoption may help improve performance. After all, if competitors have improved performance by using consultants, delayed reaction in following suit might lead to deterioration in performance relative to these competing firms.

Several theories have been proposed to explain the adoption of management consultancy. Armbrüster (2006) applies four theoretical perspectives – transaction



cost economics, signalling theory, embeddedness theory and sociological neo-institutionalism – from both functionalist and critical views to analyse the market mechanisms of management consultancy systematically. He argues that these four theories together can shed light on the phenomenon of management consultancy better than individual theories. Our empirical findings are consistent with his point of view in that the adoption of management consultancy is a complex decision, motivated by different needs and forces.

As the management consultancy market in China is fast growing, competition among service providers will become more intensive. It is crucial that these providers have a better understanding of Chinese companies' needs and forces affecting their adoption decisions. On the other hand, as Chinese companies increase their utilization of management consultancy, managers and stakeholders playing a monitoring role should be aware of the opportunity cost and problems of adopting, implementing and managing the change process. They should be aware that the success of consulting projects does not stem solely from economic reasoning, but can also be strongly influenced by internal and external political and social factors.

Although we do not find foreign ownership having a significant effect on management consultancy adoption overall, we find that foreign ownership appears to be positively and significantly associated with the adoption of foreign management consultants. This suggests that one way for foreign management consultants to enter the Chinese consultancy market or expand existing services is to seek opportunities in Chinese companies with foreign investments.

These findings must be interpreted with caution because of our cross-sectional data. The performance effects of management consultancy may better manifest in time-series data than cross-sectional data. Our data also do not enable us to identify the specific underlying forces that drive Chinese firms mimicking other firms in adopting management consultancy. These limitations open avenues for further research. In particular, they call for alternative research design and methods that can address the outstanding issues identified here. Research design and methods using case studies may prove to be fruitful (Yin, 1989).

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Notes

- 1 The types of management consultancy studied here include finance and investment, management methods and systems, strategy, adoption of information technology and systems, and taxation (see Panel B of Table 2).
- 2 Based on an exchange rate of RMB–US\$ ratio 1:8.
- 3 A sample company might use both domestic and foreign consulting firms, but its response cites only the consulting firm with the biggest assignment.
- 4 SOEs in China are enterprises wholly owned by the state, and protected explicitly from other governmental departments' interference or obstructions by the SOE Law (1988) and Autonomous Management Rights Regulations (1992). In addition, SOE managers are motivated by a performance-based bonus payment scheme to increase productivity.



- 5 We thank one of the anonymous referees for suggesting this point.
- 6 Although it may be argued that CSRC assistance might entice more favourable answers than if CSRC were not involved, the fact that many companies reported no or little adoption of ICT, MACs and management consultancy suggests that this is not a major concern.
- 7 Statistically, factors with eigenvalue greater than 1 accounts for the variance of at least a single variable (Kaiser, 1960). Therefore, factors with an eigenvalue of 3.841 are considered significant and retained for interpretation. The generally agreed lower limit for Cronbach's α , a reliability coefficient that assesses the consistency of the entire scale, is 0.70 (Nunnally, 1978). Therefore, Cronbach's α equal to 0.857 is considered satisfactory in the light of the relatively few items in the scale.
- 8 Generally, if the stock market values some unmeasured or unrecorded assets (such as growth opportunities) of a company, its Tobin's Q is probably greater than 1.0. However, for Q to be reliable, measures of both the market value and replacement cost of a firm's assets (both tangible and intangible) must be accurate.
- 9 Data on ownership, industry membership and firm size are obtained from the sample firms' publicly available reports for 2004, the year that the survey data were collected.
- 10 By input structure, we mean the 'package' of assets (both tangible and intangible) used in production and operation. Wiwattanakantang (1999) argues that firms with many intangible (for example, investment opportunities) and less tangible assets are likely to have low debt ratio and therefore fewer agency problems.
- 11 The table of correlation coefficients is available from the corresponding author.
- 12 StateGOV is measured by the proportion of a firm's total equity held by government agencies. StateSOE is measured by the proportion of a firm's total equity held by SOE. The sum of StateGOV and StateSOE is the proportion of a firm's total equity owned by the state (StateOwn).
- 13 Although operational budgeting techniques may not necessarily be new, incorporating them into budget management systems has become a hot topic in Chinese firms over the last decade (Xu and Wang, 1997).
- 14 We thank an anonymous referee for suggesting this point.

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