Prometheus
Vol. 30, No. 2, June 2012, 169–178

Routledge
Taylor & Francis Group

RESEARCH PAPER

Innovative or imitative? Technology firms in China

Connie Zheng[a]* and Bai Xuan Wang[b]

[a]*Deakin Graduate School of Business, Faculty of Business and Law, Deakin University, Melbourne, Australia;* [b]*School of Economics and Management, China's University of Geosciences, Wuhan, China*

This paper has two aims. First, we clarify the belief that many Chinese firms have operated quite successfully both onshore and offshore by following cost-cutting strategies, through process efficiency rather than innovation. Second, we explain the reasons why Chinese firms are not all innovative by means of a review of empirical studies, as well as our own examination of two technology companies. We argue that there might be a dynamic sort of innovation that combines strategic costing with organisational and technological changes, and which has contributed to the fast growth and business success of some Chinese firms on the global stage in recent years. We use institutional theory and a resource-based view of the firm to explain why firms follow either innovative or imitative strategies. In analysing the three areas of innovation in two technology-based firms, we detect both innovative and imitative behaviour in Chinese firms. Our conclusion is that not all Chinese firms are innovative. Most Chinese firms follow an imitative strategy because of an imperfect institutional environment which diminishes the protection of intellectual property rights, which we regard as a prerequisite for innovation. Where Chinese firms do exhibit innovative behaviour, this is still predominantly strategic cost innovation, not innovation as it is commonly perceived and understood by researchers in the West.

Introduction

To examine whether Chinese firms are innovative or imitative, we need first to understand the actual meaning of 'innovative' and 'imitative'. 'Imitation' is understood to be an individual or organisation observing, learning and replicating another's behaviour, product or practice (Ramachandran, 2006). The emphasis here is on imitative learning and adaptation. In contrast, the meaning of 'innovation' tends to vary, depending on context. Following Schumpeter (1934), contributors to the literature on innovation typically distinguish between invention (an idea made manifest) and innovation (an idea applied successfully in practice). According to the *Oxford Advanced Learner's Dictionary*, 'innovative' means introducing or using new ideas, techniques. BusinessDictionary.com defines 'innovative' as having the quality of an idea which is new and different; and 'innovation' in the business context as encompassing 'all processes by which new ideas are generated and converted into useful products and services' (BusinessDictionary.com).

As our discussion of innovation or imitation in Chinese firms is set in the business context, we define an innovative firm as one that introduces or generates something new and applies new ideas and techniques to provide useful products or

*Corresponding author. Email: connie.zheng@deakin.edu.au

ISSN 0810-9028 print/ISSN 1470-1030 online

http://dx.doi.org/10.1080/08109028.2012.668304
http://www.tandfonline.com

services. An imitative firm, on the other hand, is one that observes, learns and adapts products and services provided by other firms. Both types of firms could create value for organisations as well as customers, the end users of the products and services.

On the surface, many Chinese firms may fit in either the innovative or the imitative category. Since the implementation of the open door policy in the late 1970s, particularly after China's accession to the World Trade Organisation in 2001, Chinese firms have indeed learnt, used, adapted and adopted ideas and techniques. These have come largely from the West through the increasing accessibility of knowledge and international education, as well as through global value chains, foreign direct investment and technology transfer via multinational companies (Cheung and Lin, 2004).

An innovative firm must introduce something 'new'. Have Chinese firms brought out anything new? If so, is their innovation new to themselves only, or to the country/region, or to the world? We take the view of the OECD (1997) in measuring a firm's innovativeness as creating something novel, not only in the firm itself, but also in its country of operation as well as in the world as a whole.

Indeed, for the past 30 years, structural changes among Chinese firms have been rapid. The activities of multinational companies from China have captured a great deal of attention. Some writers (e.g. Mathews, 2006; Williamson, 2010) believe that a dynamic 'innovation' that combines strategic cost and organisational, as well as technological change initiatives contributes to the success of such fast-growing Chinese firms. However, empirical evidence is weak. It can just as easily be argued that the impressive performance of Chinese firms has been the result of their excellent imitative capacity, not an innovative strategy (Xie and White, 2006; Altenburg *et al*., 2008).

Therefore, it is uncertain whether Chinese firms are actually innovative and imitative. This paper looks for evidence by cross-examining two Chinese technology companies. We will review the literature on why firms innovate or imitate. Several empirical studies on the innovation performance of Chinese firms are also examined. Whether the two Chinese companies investigated are actually innovative or imitative will be assessed in the light of this literature.

Literature review

Theories explaining the drivers of innovation

The existing literature provides two theories to explain the drivers for firms either to innovate or imitate. These are institutional theory and resource-based view (RBV). According to institutional theory, innovative/imitative behaviour and strategic choices are driven primarily by isomorphic pressures embedded in formal and informal institutions (DiMaggio and Powell, 1983). A firm is motivated to enhance its legitimacy either by doing things that are dramatically different ('innovative', but economically, politically and socially acceptable) or by conforming to what others do ('imitative') (DiMaggio and Powell, 1983; Zhou and Li, 2007; Yang, 2009).

In the context of Chinese firms, state advocacy of enterprise modernisation and its drive to build national innovative capacity (see Hu and Mathews, 2008; Lu and Etzkowitz, 2008) have greatly induced the coercive force to drive innovation at the firm level. This has also pushed the transformation of organisational structure, especially in state-owned enterprises. In addition, the state allows the establishment of other types of enterprises, such as privately-owned, wholly-foreign-owned, and town–village enterprises, thus intensifying the competition. This hyper-competitive

environment has not only induced uncertainty, but also promoted both innovative and imitative behaviour among firms.

In addition to an uncertain environment, a weak institutional framework encourages firms to model their own behaviour and practices against the leading firms, especially in the areas of technology upgrade and adoption of management know-how. For example, Deng (2009) discusses a number of formal institutional constraints (such as an inefficient legal framework and weak intellectual property rights) which discourage innovations, making businesses reluctant to invest in R&D or to build global brands. Consequently, Chinese firms tend to acquire strategic assets by expanding overseas because internal development of technology capabilities is time-consuming and determined by firms' existing resources. Chinese firms rarely create new products, but typically compete on volume and low price, and often simply imitate each other's products (Deng, 2009).

Without clear rules of the game, imitation is the best strategy for Chinese firms in the short term, if not the long term, especially in their early stage of development when they are facing great uncertainty in their environment (e.g. changing regulations or World Trade Organisation membership). However, when firms become established and familiar with the rules in the competitive environment it becomes possible to break rules and be different, to be innovative. A longitudinal study of 1004 cross-border mergers and acquisitions by 671 Chinese firms over a 20-year period suggests that there has been a gradual decrease in conformity (Yang, 2009).

One needs to be very careful when examining the innovative activities of Chinese firms, assessing not simply what they say, but what they have actually achieved. The Chinese definition of 'high technology' or 'innovation' is very broad and only some activities would conform to the definitions of innovation commonly accepted in developed countries. Chen and Kenney (2007) give the example of 'personal computer assembly' as an innovative, high technology activity in China: few in Europe or the US would agree. Chinese firms gain tax and other benefits if they are considered to be innovative. Such incentives encourage Chinese firms to present themselves as innovative (especially to funding bodies and administrative agencies controlled by the communist party) so they can gain government support in R&D funding and tax avoidance. The Chinese government plays an important role in instilling values and indirectly influencing investment decisions through taxation and loan schemes. The government targets certain industries and devises sophisticated tax concession schemes to promote innovations in products and processes at firm level (Lu, 2000). Firms are required to meet certain requirements, such as number of technology personnel and percentage of sales contributed by new products.

There are few empirical studies of the innovative capabilities of Chinese firms based on the resource-based view (RBV) (Barney, 1991). Yam *et al*. (2004) studied the technological innovation of 213 firms in Beijing. They specified seven technological capabilities as R&D, resource allocation, learning, manufacturing, marketing, organising and strategic planning capabilities, though without theoretical justification. They measured innovation performance in line with the Chinese convention that an innovative firm is one which has an innovation rate of greater than 20% in the last three years, though this rate is never explained. Is it the rate of new product creation in the given year? Nevertheless, they found that only 72 out of 213 firms (30%) could be categorised as innovative firms. Hence, the majority (70%) of these Chinese firms were actually imitative firms without substantial investment in R&D.

Liu *et al*. (2009) examine a 10-year strategy to build strategic capabilities to enhance technological innovation in a textile company in China. They found that the firm's strategic capabilities were broadly influenced by neither technological resources nor innovation resources, but by organisational culture, human resources and organisational structure, among which human resources was the most dynamic (p.411). The emphasis was on creating an innovative human resource development system to generate technological innovation. So, the empirical evidence suggests that an imitation strategy dominates the innovation of Chinese firms. Mathews (2006) and Williamson (2010) relate the success of Chinese firms to a dynamic process of innovation, and there is a need to examine this process.

Three types of innovation: strategic, organisational and technological

Strategic innovation involves breaking rules and being revolutionary (Kim and Mauborgne, 2005). Anecdotal evidence (see Anderson and Markides, 2007; Williamson, 2010) suggests that companies from emerging economies, such as China, are particularly good at moving away from the bloody waters saturated with big giants and breaking into new territories. Systematic study of the strategic innovation of Chinese firms is yet to be explored. Patchy empirical studies (e.g. Zhou *et al*., 2005; Zhou, 2006) conclude that imitation, not innovation, remains the common strategy in Chinese firms. It is likely that, at the strategic level, Chinese firms focus on cost-cutting strategies instead of innovation.

There are many theoretical explanations of organisational innovation; three deserve brief review here. First, organisational design theories emphasise changing organisational structural forms in order to do something new. The unit of analysis is the organisation and the main aim is to identify the structural characteristics of an innovative organisation, or to determine the effects of organisational structural variables on product and process innovation (Lam, 2004). Indeed, recent mergers and acquisitions of Chinese firms and firms from the East Asia tiger economies, such as Hong Kong, Singapore, South Korea and Taiwan, tend to be treated as innovative because they form highly unconventional global cellular clusters and integrate global operations (Mathews, 2006).

Second, organisational cognition and learning theories tend to look at micro-level processes to examine how organisations develop and adapt new ideas for problem solving. The focus is on the cognitive foundations of organisational innovation and on understanding the capacity of organisations to create and exploit new knowledge necessary for innovative activities (Lam, 2004). In assessing multinational companies from emerging economies, many attribute their success in international markets to their keenness, leapfrogging or springboard approach, not only with technology, but also with management and organisational know-how (Buckley *et al*., 2007; Luo and Tung, 2007).

The third perspective is based on organisational change theories. Emphasis is on the processes underlying the creation of new organisational forms in the context of internal and external environments. Interest is in whether organisations can overcome inertia and adapt in the face of radical environmental shifts, and whether organisations have capacities to respond to changes in the external environment, and to influence and shape it (Lam, 2004). Since the economic reforms, and particularly after WTO accession, Chinese firms have been under enormous pressure to change and innovate as a result of the government economic policies and changing

market conditions. Responses may well take the form of radical new organisational types, such as town and village enterprises, joint ventures, privately-owned firms, and merged and acquired global network firms (Yang, 2009). Given the new development of Chinese firms, it is necessary to know whether they are innovative at the organisational level. Is there a relationship between organisational structural forms and innovativeness, and/or a relationship between organisational learning and knowledge creation and innovativeness; and/or a relationship between organisational capacity for change and adaptation and innovation in the context of a turbulent and changing environment?

The last area of innovation often discussed in the literature is technological innovation, which is described as the process by which new or improved technologies are developed and brought into use through the interaction of a number of organisational and contextual factors (Lam, 2004). Individual, organisational as well as contextual variables have been found to be good predictors of technological innovation (Kimberly and Evanisko, 1981). One of the key organisational variables impacting on technological innovation is people. Howell and Higgins (1990, p.318) describe five types of personnel in the firm's technological innovation process. In their taxonomy, gatekeepers acquire, translate and distribute external technological knowledge and advancements to their colleagues. Project champions distil creative ideas from information sources and then promote them within the organisation. Business innovators provide support, access to resources and protection from organisational interference as innovations emerge. Technical innovators design and/or develop the innovation. Lastly, user champions implement the innovation by training and providing assistance to users.

Altenburg *et al*. (2008) explicitly define the champions in modern Chinese and Indian firms as those highly mobile, technically skilled engineers, scientists and entrepreneurs travelling between leading and latecomer countries, creating backward and forward linkages and promoting technology transfer and diffusion. It is believed that the latecomer countries are no longer fearful of brain drain, but they utilise a 'brain circulation' of entrepreneurs, scientists and engineers to build up technological innovation capabilities.

The debate is nonetheless still on whether Chinese firms genuinely have technological innovation capabilities or whether they imitate new technology, taking advantage of technology found in the many multinational companies operating within China (see Cheung and Lin, 2004; Altenburg *et al*., 2008). Under its 'market for technology' policy, China has been providing policy incentives to attract foreign direct investment in order to obtain advanced technology from developed countries. As Teece (1986) and Mathews (2006) have argued, first movers in technology innovation may not gain significant economic returns if they allow newly developed technology to spread across borders and diffuse to local subsidiaries. Firms in the latecomer countries can take the benefits of technology diffusion and modify technology (creative imitation rather than innovation). Imitation is easy when multinational firms and local governments allow – even encourage – their subsidiaries and local firms to imitate. In China, many multinationals willingly trade technology for market access. The Chinese government, ostensibly enthusiastic about technological innovation, has in fact been more interested in simple quantitative statistics, such as rates of growth and the number of patents. Many Chinese patent statistics are of dubious merit. In addition, many are filed by foreign firms seeking protection in China, and are not Chinese in origin (Chen and Kenney, 2007). Therefore, it is

generally quite difficult to assess the technological innovation capabilities of Chinese firms, even though multiple indicators are used (Altenburg *et al*., 2008). Anecdotal reports suggest that there is still a long way to go before Chinese firms will be able to compete thoroughly; many are still ruled by cost-based decision-making (Xie and White, 2006, p.239). The capacity of Chinese firms to innovate independently still remains low (Lu and Etzkowitz, 2008).

Case analysis

Two technology/knowledge-based Chinese firms in Wuhan were selected as cases for analysis. They are referred to here as IE1 and IE2 (IE=innovative enterprise). IE1 is a privately-owned Chinese company, established in 1993, and currently listed on the Shenzhen Stock Exchange. The company, employing over 5000 people, uses biofuel to generate electric power. It is also working on developing new energy for the chemical industry, and new products for environmental protection and water treatment. IE2 is a collective, a Chinese company with a single state agency owning 40% of its shares. The company was established in 1999, and listed on the Shanghai Stock Exchange in late 2010. Employing over 1000 people, the company focuses on security data management, producing various cards and chips for the telecommunications industry (mobile phones), banking (credit cards) and transport (e-travel cards). The company has operations in over 20 countries, mainly in the Middle East and Africa. Questions were asked in Mandarin and translated back to English by the first author, who is fluent in both English and Mandarin.

Results

In both firms innovation was internally driven, and promoted by fierce competition in both domestic and international markets. As private or collective companies, both saw survival is their main goal. To survive in current market conditions, firms had to do something new every year to please their shareholders. Nonetheless, the importance of government policy and funding support were also acknowledged, especially by IE2 (the collective with a 40% stake held by a state agency). Even so, the respondent insisted that the firm's R&D was all self-funded and not funded by the government or externally. It may be that the respondent felt obliged to praise the government's innovation policy.

IE1 had apparently been granted over 100 patents in China (none in the US), and had made a further 54 inventions patent applications. Even so, it feared its inventions would be copied, most likely as a consequence of publication by the Chinese Patent Office. IE1 had fought a three-year court case over ownership of the initial patent (involving the use of a particular chemical to clean water). This had actually benefited hundreds of small firms which followed the court case and became wealthy after learning and using the water management technology. So it appears that even though there might be an innovative firm with its own patent, such as IE1, there is little to stop other firms imitating its technology.

Both firms adopted similar HR strategies, such as recruiting high profile R&D personnel from top Chinese universities, even around the world in the case of IE1. Both firms provide incentives to reward innovative ideas. There are rewards for patents granted, especially granted in the US, though neither firm held any US patents. IE1 also invested in the families of R&D personnel, especially those recruited

offshore. Decent allowances were provided to family members, with additional expenses provided for children in school. IE2 also provided tuition fees for those with three years of service in the firm to undergo further education and training. Both IE1 and IE2 insist on performance evaluation and feedback, often monthly, to maintain, retain and improve innovative capabilities.

There has been technological innovation in both firms, even though the initial technology in biofuels and in chips on cards could have been created by companies outside China and transferred to China by multinational companies. For example, many features of the Chinese versions of the iphone or Blackberry, so-called s*hanz-hai* appliances, were directly copied from Apple, with only small components invented locally. There are certain elements of the creative innovation suggested by Zhou (2006), but not the creative innovation defined by Kriz (2010) as invention with new products. Chinese firms may have innovative spirits, but few produce genuinely novel products (Kriz, 2010). What might be seen as collaborative innovation between university and industry is evident in the case of IE1, and in an early joint venture between IE2 and a foreign firm. IE2 began by manufacturing SIM cards with technology provided by its foreign partner. When IE2 broke up with its partner, it established its own brand name and now controls 40% of the Chinese market in security cards/chips.

The products and services provided by IE1 are the result of collaborative innovation by Chinese staff from a Chinese university and the private Chinese firm. In contrast, the products from IE2 are less indigenously Chinese. IE2 claimed inventions and had been granted patents, but its technology had been imitated, adapted and adopted from its foreign partner. In areas of organisational innovation, there is evidence of changes in structural form, learning and knowledge creation, and quick adaptation to a changing external environment. For example, one of the interviewees (the manager for organisational strategy at IE1) especially emphasised three stages of transformation of the firm, each stage accompanied by new thinking, new products and new growth of the firm. IE2's rapid transition from a joint venture to a collective also illustrates changing organisational structure, though the novelty of products was not clearly demonstrated. Supported by a state agency, IE2 was able to capture a large share of the domestic market, and markets across the Middle East and Africa.

IE1 and IE2 provide evidence that investment in both R&D and human capital is conducive to innovation. Both firms have over 50% staff in R&D – a strong indicator of internal learning and new knowledge creation. Both firms show pride in their use of a low cost strategy to beat their Western counterparts, especially in international competition. In the case of IE2, as its assistant general manager indicated, the firm was more willing to go to the countries where Western competitors did not want to go (see Kim and Mauborgne, 2005). In fewer than five years, IE2 had tripled its overseas' sales, almost reaching 40% of total sales.

Discussion and conclusion

Zeng and Williamson (2007) define cost innovation in the context of Chinese firms as offering niche and customised products at an increasing price. Many Chinese companies, especially those operating offshore, have tapped into both upstream and downstream markets with a mass market strategy. They reduce price, but are still able to sell products containing advanced technology and R&D inputs to make a

profit. Williamson (2010) describes cost innovation as: (1) offering customers high technology at low cost; (2) selling a variety of customised products at low cost; and (3) switching low-volume, high-priced specialty products to high-volume and low-cost, but still high-end products. Chinese firms, including the two firms interviewed, displayed all three facets. They produced biofuel electric power and SIM cards with a high-level of R&D input, yet sold at low price to ensure mass consumption; in return, their profit margins were large enough to meet shareholder expectations.

It is necessary, however to be mindful that cost innovation can be achieved only when two conditions are met: first, the existence of a global value chain to facilitate continuing technology acquisition and diffusion; and second, continuous downward pressure on global wages. Chinese firms are able to deliver high technology at low cost because they are able to tap into cheap sources of technology (Lu, 2000; Mathews, 2006; Williamson, 2010). This is facilitated by the government's 'market for technology' initiative and by the willingness of foreign firms to trade technology in return for market access. Additionally, the local supply of qualified Chinese scientists and engineers remains steady. Without organised effort, it looks very unlikely, at least in the short term, that they will be able to negotiate higher wages. In the absence of these advantages, firms would have had to focus on actual organisational and technological innovations to find new ways to do more with less.

Even an extensive review of the literature gives little clue as to whether Chinese firms are innovative. All that is evident is that some Chinese firms have engaged in strategic innovation, especially cost innovation. Some forms of organisational innovations are in place, but empirical evidence is lacking. It appears that an imitation strategy is much more widely adopted among Chinese firms than an innovation strategy. For the time being, Chinese firms can take advantage of a cost reduction strategy and successfully share niche markets internationally. In the long run, though, only investment in human resources and a new organisational identity will allow Chinese firms to break the imitation cycle and move into a creative paradigm (Xie and White, 2006; Kriz, 2010).

We used two case companies to assess the extent to which Chinese firms are driven to innovate or imitate, whether they have innovative capabilities. Although the two companies are gradually developing internal capabilities to generate technological innovation, there were still traces of imitative behaviour – more precisely, collaborative innovation. Interviewees mentioned organisational innovation, yet strategic cost innovation is predominant. The water treatment patents of IE1 had an impact only on the domestic market. Even though the products and services provided by IE2 were sold in the Middle East and Africa, the fact that neither IE1 nor IE2 had been granted patents outside China may indicate that the products created by the two firms may be new only to the organisation concerned and may have had an impact on only the Chinese market. The limitation of our current study is obviously the small sample size. The two firms investigated demonstrate both innovative and imitative traits, but further work needs to be carried out with a large sample to evaluate the innovative capabilities of contemporary Chinese firms.

Acknowledgements

We thank Dimitris Assimakopoulos of Grenoble Ecole de Management, and Yipeng Liu of the Institute for SME Research and Entrepreneurship at Mannheim University for their comments on the initial conceptual paper presented by the first author at the 10th European Academy of Management, held in Rome in May 2010. Professor Assimakopoulos especially

encouraged us to collect data to strengthen the paper with empirical evidence. Without his invitation and encouragement, the new version of the paper could not have been born. We also thank two anonymous interviewees for allowing us to collect much needed empirical data and for the comments made by two reviewers. All errors remain the responsibility of the authors.

References

Altenburg, T., Schmitz, H. and Stamm, A. (2008) "Breakthrough? China's and India's transition from production to innovation", *World Development,* 36, 2, pp.325–44.

Anderson, J. and Markides, C. (2007) "Strategic innovation at the base of pyramid", *Sloan Management Review,* 49, 1, pp.83–8.

Barney, J. (1991) "Firm resources and sustained competitive advantage", *Journal of Management,* 17, 1, pp.99–120.

Buckley, P., Clegg, L., Cross, A., Liu, X., Voss, H. and Zheng, P. (2007) "The determinants of Chinese outward foreign direct investment", *Journal of International Business Studies,* 38, pp.499–518.

Chen, K. and Kenney, M. (2007) "Universities/research institutes and regional innovation systems: the case of Beijing and Shenzhen", *World Development,* 35, 6, pp.1056–74.

Cheung, K. and Lin, P. (2004) "Spill-over effects of FDI on innovation in China: evidence from the provincial data", *China Economic Review,* 15, pp.25–44.

Deng, P. (2009) "Why do Chinese firms tend to acquire strategic assets in international expansion?", *Journal of World Business,* 44, pp.74–84.

DiMaggio, P. and Powell, W. (1983) "The iron cage revisited: institutional isomorphism and collective rationality in organizational fields", *American Sociological Review,* 48, 2, pp.147–60.

Howell, J. and Higgins, C. (1990) "Champions of technological innovation", *Administrative Science Quarterly,* 35, 2, pp.317–41.

Hu, M. and Mathews, J. (2008) "China's innovative capacity", *Research Policy,* 36, pp.1322–49.

Kim, W. and Mauborgne, R. (2005) *Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant?*, Harvard Business School Press, Boston, MA.

Kimberly, J. and Evanisko, M. (1981) "Organizational innovation: the influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations", *Academy of Management Journal,* 24, 4, pp.689–713.

Kriz, A. (2010) "The challenge to rekindle China's innovative spirit", *Management Decision,* 48, 4, pp.541–61.

Lam, A. (2004) "Organisational innovation" in Fagerberg, J., Mowery, D. and Nelson, R. (eds) *Handbook of Innovation*, Oxford University Press, Oxford.

Liu, J., Baskaran, A. and Li, S. (2009) "Building technological-innovation-based strategic capabilities at firm level in China: a dynamic resource-based-view case study", *Industry & Innovation,* 16, 4, pp.411–34.

Lu, L. and Etzkowitz, H. (2008) "Strategic challenges for creating knowledge-based innovation in China: transforming triple helix university–government–industry relations", *Journal of Technology Management in China,* 3, 1, pp.5–11.

Lu, Q. (2000) *China's Leap into the Information Age: Innovation and Organization in the Computer Industry*, Oxford University Press, New York.

Luo, Y. and Tung, R. (2007) "International expansion of emerging market enterprises: a springboard perspective", *Journal of International Business Studies,* 38, pp.481–98.

Mathews, J. (2006) "Dragon multinationals: new players in 21st century globalization", *Asia Pacific Journal of Management,* 23, pp.5–27.

Organisation for Economic Co-operation and Development (OECD) (1997) *The Measurement of Scientific and Technological Activities: Proposed Guidelines for Collecting and Interpreting Technological Innovation Data*, Oslo Manual, OECD, Paris.

Ramachandran, V. (2006) *Mirror Neurons and Imitation Learning as the Driving Force Behind 'The Great Leap Forward' in Human Evolution*, Edge Foundation, available from http://www.edge.org/3rd_culture/ramachandran/ramachandran_p1.html [accessed 1 May 2010].

Schumpeter, J. (1934) *The Theory of Economic Development*, Harvard University Press, Cambridge, MA.

Teece, D. (1986) "Profiting from technological innovation: implications for integration, collaboration licensing and public policy", *Research Policy,* 15, 6, pp.285–305.

Williamson, P. (2010) "Cost innovation: preparing for a "value-for-money" revolution", *Long Range Planning,* 43, pp.343–53.
Xie, W. and White, S. (2006) "From imitation to creation: the critical yet uncertain transition for Chinese firms", *Journal of Technology Management in China,* 1, 3, pp.229–42.
Yam, R., Guan, J., Pun, K. and Tang, E. (2004) "An audit of technological innovation capabilities in Chinese firms: some empirical findings in Beijing China", *Research Policy,* 33, pp.1123–40.
Yang, M. (2009) "Isomorphic or not? Examining cross-border mergers and acquisitions by Chinese firms, 1985–2006", *Chinese Management Studies,* 3, 1, pp.43–57.
Zeng, M. and Williamson, P. (2007) *Dragons at Your Door: How Chinese Cost Innovation is Disrupting Global Competition*, Harvard Business School Press, Boston, MA.
Zhou, K. (2006) "Innovation, imitation, and new product performance. the case of China", *Industrial Marketing Management,* 35, pp.394–402.
Zhou, K., Gao, G., Yang, Z. and Zhou, N. (2005) "Developing strategic orientation in China: antecedents and consequences of market and innovation orientations", *Journal of Business Research,* 58, pp.1049–58.
Zhou, K. and Li, C. (2007) "How does strategic orientation matter in Chinese firms?", *Asia Pacific Journal of Management,* 24, pp.447–66.