



# The inner circle of technology innovation: A case study of two Chinese firms

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## ABSTRACT

In the era of information economy, Chinese firms have realised that technology innovation is fundamental for organisations to gain competitive advantages in the global market. This case study evaluates the drivers and antecedents of technology innovation of two emerging Chinese multinational firms. Institutional theory, the resource-based view and the competency-based strategic perspective are used as the basis for case analysis. The findings show some similarities and differences between the growth of Chinese multinational firms and those of more traditional ones. Chinese firms appear not to follow single innovation pathways but take multiple routes combining several types of innovation, such as strategic, organisational and operational innovation. The key component in the successful technology innovation process among Chinese firms was found to be in alignment with several human resource management strategies. The case study concludes with discussion on managerial and pedagogical implications. These help address inherent differences in the innovation management process between emerging Chinese and established multinational firms.

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## 1. Introduction

A significant number of technology-intensive firms from mainland China (i.e., Huawei, Lenovo, Haier, ZTE) have appeared on the international scene in recent years. These emerging Chinese firms have not only operated successfully inside China, but also moved quickly offshore, penetrating the market previously dominated by established Western multinational companies [1]. Many wonder, what drives the success of these emerging firms [2]? Does technology innovation contribute to such success? If so, what are the underlying forces that drive technology innovation? This case study uses two Chinese firms to illustrate the complex forces behind the phenomenal technological innovation of emerging Chinese firms.

Three dominant and related theories serve to explain the reasons behind technological innovation at firm level, they are institutional theory [9,46,48], resource-based view [17,18]

and competency-based strategic perspective [7,42,47,64]. The institutional perspective suggests that the external pressures influence firms' innovative behaviour. These pressures are embedded in formal and informal institutions that either support or constrain organisations to innovate [9,48]. The formal and informal rules facilitate the isomorphism process, using coercive, mimetic and normative forces to drive firms to be either innovative (doing something dramatically different) or imitative (conforming to others) [9,10,62].

In contrast, resource-based view and competency-based perspectives focus on building internal resources and capabilities to gain strategic competitive advantages. The resource-based view emphasises the development of unique resources that are valuable, rare, inimitable and non-substitutable, which potentially contribute to innovation [17,19]. The competency-based perspective stresses building internal managerial capabilities and technical competencies conducive to technologically innovative activities [42,55,56,64]. Unique resources and innovative competencies are essential to achieve high performance outcomes and fulfil firms' strategic positioning in the competitive environment [17–19].

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In the context of Chinese firms, state advocacy for enterprise modernisation since the economic reforms in 1978 have induced coercive forces at the firm level. The Chinese government intends to build national innovative capacity by focusing on seven key industries such as information technology, clean-energy automobiles, biotechnology, new materials, new energy, high-end manufacturing and environmental protection [8]. This focus has driven firms to be technologically innovative [12,13]. However, under an uncertain environment and with a weak institutional framework (e.g., lack of legal enforcement of patent protection), it is safer for firms to mimic or to model their own behaviour and practices on leading multinational firms, especially in the areas of technology upgrade and adoption of management know-how [14]. Similar mimetic isomorphism of US technology development trends was evident in many Chinese firms [48], especially when faced with greater uncertainty in the transitional environment, as that exhibited in the Brazilian context [57]. According to Hall et al., most emerging economies such as Brazil, Russia, India, China and South Africa (BRICS) share some common social uncertainties due to poverty and environmental concerns. Yet, greater technology innovation in key industries such as biofuels in Brazil was shown to be effective in addressing the social uncertainties [57].

In addition, normative standards with socially acceptable values play an important role too. Even though claiming to be a socialist state, China has, in fact, become a market-driven economy during the 30-odd yearlong economic reforms. The norms emphasise competition and efficiency [4,5,25,26,29].

With the external support of the central government's industry innovation policy and several mimetic and normative forces, Chinese firms are under pressure to focus on building technological capabilities and competencies in order to remain competitive in the global market [33,45]. Yet, very limited research has been conducted to explore the interaction between the internal and external forces to create technology innovation in Chinese firms. This case study aims to fill up the gap.

The process of technology innovation is arguably engaged in a range of organisational activities [27]. These activities are involved with the top level of executive strategic thinking (i.e., strategic innovation) [58], mid-level of managerial execution of various organisational policies and practices (i.e., organisational innovation) [27], and frontline staff commitment to 'make it happen' (i.e., operation innovation) [32]. Fig. 1 represents an integrated framework to explain internal and external drivers, with several organisational levels of innovation, which act as antecedents for technology innovation. The depicted model is, therefore, used for the subsequent case analysis.

## 2. Literature review and contextual factors in China

The critical path to successful industrial innovation is both internally and externally driven, which is also arguably achieved in a series of sequential steps [3]. Dunphy et al. argue that technology innovation at the firm level occurs when there is, first, a scientific discovery from anywhere in the world. The new idea (or discovery) leads to an invention or to the application of new technology in the form of a product or a process, by an individual or an organisation. Last, the invention (or product) is commercialised or the idea (the process) is adopted by the community of practice [3] (also see [49,50]). It is not always clear, however, whether Chinese firms have gone through these steps sequentially. Mathews, in his study of dragon multinationals, argues that technology innovation for some East Asian companies is a *dynamic process* which involves many elements, such as strategic management of resources and activities relating to the internal and external organisational environments [4] (see also [51]). Hence, it is important for managers, as advised by Peter Drucker, to be disciplined and alert to the internal and external factors that could have influenced firms' innovation [56]. With this advice, internal and external factors affecting innovation capabilities and performance of Chinese firms are evaluated.

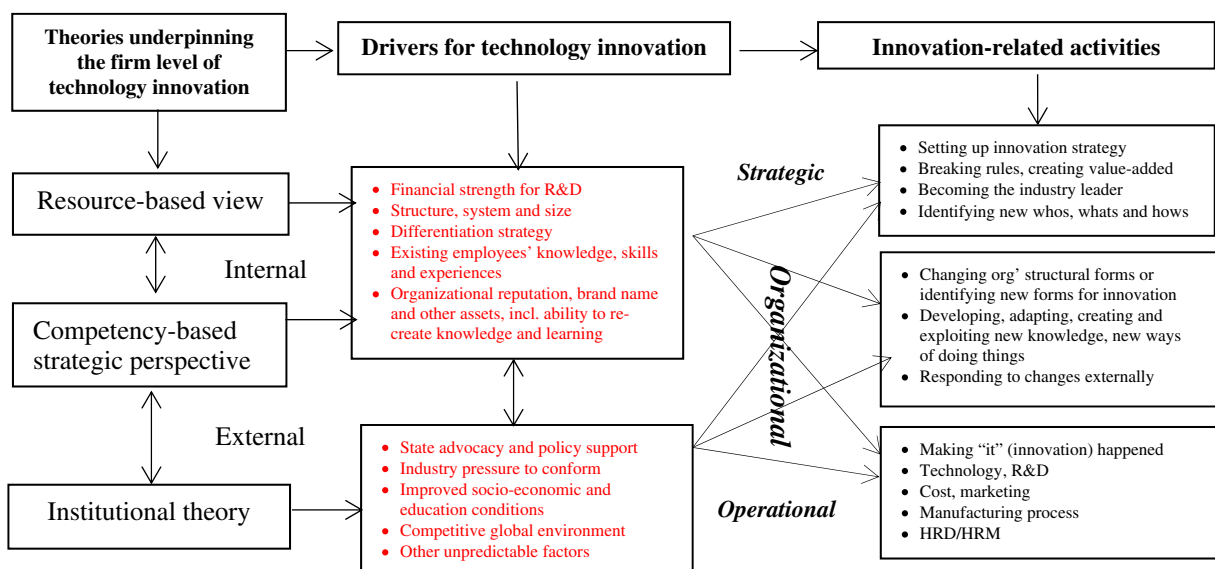


Fig. 1. An integrated framework of technology innovation among emerging Chinese firms.

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