

Barriers to Strategic Design: A Perspective from China

Abstract Strategic design is a driver for innovation that can lead to sustainable competitive advantage. Over the past two decades, the barriers limiting breakthrough strategic design development have been studied in much detail. However, that research is based on well-developed practices in Europe, where strategic design and innovation capabilities have been nurtured for a long period. Barriers to the adoption of strategic design practices and leadership have seldom been studied in high growth economies in which design and innovation competencies are not yet mature. We examined design-led innovation cases from Chinese design clients and consultancies, and uncovered twelve barriers to strategic design practice and leadership in China. Six of these are similar to hindrances experienced elsewhere, and the other six are unique to this study. We found that in China, certain constraints limiting the adoption of strategic design in practice exist in the environment outside the firm. Based on these findings, we offer suggestions to stakeholders for overcoming the barriers to utilizing design at the strategic level.

Keywords

Breakthrough innovation
Design-led innovation
Design implementation
Strategic design

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1 Birgit H. Jevnaker, "Championing Design: Perspectives on Design Capabilities," *Design Management Journal* 1, no. 1 (2000): 37; Frans Joziassé, "Corporate Strategy: Bring Design Management into the Fold," *Design Management Journal* 11, no. 4 (2000): 41, DOI: <https://doi.org/10.1111/j.1948-7169.2000.tb00146.x>.

2 Ezio Manzini and Carlo Vezzoli, "A Strategic Design Approach to Develop Sustainable Product Service Systems: Examples Taken from the 'Environmentally Friendly Innovation' Italian Prize," *Journal of Cleaner Production* 11, no. 8 (2003): 859, DOI: [https://doi.org/10.1016/S0959-6526\(02\)00153-1](https://doi.org/10.1016/S0959-6526(02)00153-1); Joziassé, "Corporate Strategy," 37; Brigitte Borja de Mozota and Bo Young Kim, "Managing Design as a Core Competency: Lesson from Korea," *Design Management Review* 20, no. 2 (2009): 68, DOI: <https://doi.org/10.1111/j.1948-7169.2009.00009.x>.

3 Fernanda Hänsch Beuren, Marcelo Gitirana Gomes Ferreira, and Paulo A. Cauchick Miguel, "Product-Service Systems: A Literature Review on Integrated Products and Services," *Journal of Cleaner Production* 47, (2013): 223, DOI: <https://doi.org/10.1016/j.jclepro.2012.12.028>; Manzini and Vezzoli, "A Strategic Design Approach," 856.

4 Jevnaker, "Championing Design," 33.

5 *Ibid.*, 35.

6 *Ibid.*, 37.

7 Jordi Montaña, Francisco Guzmán, and Isa Moll, "Branding and Design Management: A Brand Design Management Model," *Journal of Marketing Management* 23, no. 9-10 (2007): 830, DOI: <https://doi.org/10.1362/026725707X250340>.

8 Joziassé, "Corporate Strategy," 41.

9 Claudia Acklin, "Design-Driven Innovation Process Model," *Design Management Journal* 5, no. 1 (2010): 50, DOI: <https://doi.org/10.1111/j.1948-7177.2010.00013.x>.

10 Deborah Dougherty, "Interpretive Barriers to Successful Product Innovation in Large

Introduction

Strategic design is a driver of market leadership¹ and sustainable competitive advantage.² It stimulates breakthrough innovations in product-service systems (PSS),³ enhances design leadership,⁴ facilitates the appreciation of design qualities,⁵ increases strategic value,⁶ and supports brand building.⁷ Strategic designers play multiple roles. They are the catalysts and analysts of strategic analysis, the synthesizers and evaluators of strategic decisions and the implementers of strategies.⁸

Out of all the benefits strategic design has to offer, its ability to stimulate breakthrough innovation is significant.⁹ Initial studies focused on design implementation, including barriers to product innovation¹⁰ and co-design processes.¹¹ Later research topics explored strategic design, integrating design into a firm, building design capabilities, and learning design knowledge. European researchers have extensively studied the ways strategic design can lead to breakthrough innovation, including the barriers that lie on those paths. Thanks to these contributions, many organizations have been better able to adopt strategic practices. It is important to remember that in Europe, however, the areas of strategic design and innovative competency have received attention for many years. China is a high-growth economy that has only just begun to appreciate the value design can bring. The foundations of strategic design and innovation capacity are still relatively weak.

In terms of design knowledge, capability, and implementation, Chinese practices and business performance varies a great deal. At some well-known firms – including Lenovo – designers are responsible for strategic planning and design drives innovation. At some of the faster-growing firms – Xiaomi, for example – design is part of overall strategic planning. In this article, we refer to those companies that have adopted strategic design practices, and in which designers have leading roles in innovation and/or strategic planning, as design-led firms. At most traditional firms that are not design-led, management teams may not be aware of the strategic value of design, and do not utilize it as a resource for innovation. Accordingly, in addition to the need to explore the barriers that deter the adoption of design at the strategic level, it is important to learn from the experience of leading firms who are well versed in its utilization. By revealing their challenges and current strategies, we sought to further define the main barriers to adopting strategic design, and demonstrate how Chinese firms might foster innovative strategic design practices going forward.

This led to our initial research question: what are the main barriers that inhibit Chinese firms from introducing strategic design as a lever for innovation and a driver of strategic planning?

Our sub-questions were

- What are the barriers affecting the adoption of strategic design in Chinese firms?
- Which barriers are most significant for Chinese firms, and how do these compare to those confronting Western firms?
- What suggestions can we make to stakeholders for ways to bring strategic design into business?

By answering these questions, we planned to achieve the following main objectives:

- Identify the key barriers to integrating design into business and strategy in industrial practice.
- Explore the barriers most relevant to Chinese firms through comparison with corresponding barriers found in studies conducted at Western firms.
- Explore stakeholder opinions related to the barriers to strategic design and

specify suggestions for overcoming barriers to utilizing design at a strategic level.

We identified constraints to design-driven Chinese innovation through interviews with design-led innovation firms, including design service suppliers and design clients. These we compared to the barriers reported in previous studies of Western firms operating in Western countries. As a result, here we report on common barriers shared by different regions as well as barriers unique to Chinese firms operating in China. We hope to contribute to wider understanding of these topics by actors from fast-growth regions and countries more generally, and extend the barriers into a two-dimensional frame based on strategic design innovation and regional economic factors that could be applied by those with diverse economic, cultural, and social backgrounds.

Literature Review

Strategic Design

The term strategic design refers to the practice of making design a core driver of business strategy.¹² Design can be a source of competitive advantage and a catalyst for change to the overall scope and direction of an organization.¹³ In the early 1960s, pioneer practitioners such as Walter Landor were working on integrated design solutions, including packaging design and branding. By the second half of that decade, books on strategic design and design management had already begun to appear, as noted by Victor Margolin.¹⁴ In the late 1980s, Bill Moggridge, co-founder of design consultancy IDEO, and Arnold Wasserman, former vice president of corporate industrial design at Xerox and Unisys, defined strategic design as an evolution in corporate design that integrates industrial design more deeply into a firm's operations.¹⁵ The field of strategic design has since been developed across multiple perspectives and on many levels. Among these, Birgit Jevnaker wrote in 2000 that the dynamics between internal resources and capabilities, external relationships, and material and social constructions were key areas of interest.¹⁶ In 2006, Brigitte Borja de Mozota called strategic design "design as strategy" – a top level of design learning that had moved beyond design as styling and design as process.¹⁷ From her perspective, strategic design consists of management as command and control, management as the art of collective action for design leadership, and management as managing changes. Although a variety of viewpoints on strategic design exist, many point to the complexity of its role, and its relationship to breakthrough innovation. A strategic use of design can stimulate breakthrough innovative offerings by defining the scale of PSS innovation at the strategic level.¹⁸ To emphasize the multiple roles and benefits of strategic design, we have chosen to adopt Ezio Manzini and Carlo Vezzoli's 2003 definition for this study.

"It is an intended design activity aiming at an integrated system of products, services and communication, based on new forms of organization, based on the role reconfigurations of different companies, clients and other stakeholders; a design developing a strategy linking long term goals with existing trends and based on new systems of values and new market opportunities."¹⁹

Breakthrough Innovation in China

China's innovation strategy has been evolving since 1978, the year that the economic reform and open-door policy (Open Policy)²⁰ began. At the initial stage of the Open Policy, consumers were eager to purchase mass-produced goods typically associated with a modern lifestyle – bikes, watches, washing machines, and so on. In

Firms," *Organization Science* 3, no. 2 (1992): 179, DOI: <https://doi.org/10.1287/orsc.3.2.179>; Mark S. Freel, "Barriers to Product Innovation in Small Manufacturing Firms," *International Small Business Journal: Researching Entrepreneurship* 18, no. 2 (2000): 60, DOI: <https://doi.org/10.1177/0266242600182003>; Huw Millward and Alan Lewis, "Barriers to Successful New Product Development within Small Manufacturing Companies," *Journal of Small Business and Enterprise Development* 12, no. 3 (2005): 379, DOI: <https://doi.org/10.1108/14626000510612295>; Ahmed Hassanien and Crispin Dale, "Drivers and Barriers of New Product Development and Innovation in Event Venues: A Multiple Case Study," *Journal of Facilities Management* 10, no. 1 (2012): 75, DOI: <https://doi.org/10.1108/14725961211200414>.

11 Maaike Kleinsmann and Rianne Valkenburg, "Barriers and Enablers for Creating Shared Understanding in Co-design Projects," *Design Studies* 29, no. 4 (2008): 369, DOI: <https://doi.org/10.1016/j.destud.2008.03.003>; Tea Lempiälä, "Barriers and Obstructive Practices for Out-of-the-Box Creativity in Groups," *International Journal of Product Development* 11, no. 3-4 (2010): 220, DOI: <https://doi.org/10.1504/IJPD.2010.033959>.

12 Jevnaker, "Championing Design," 25.

13 Joziassé, "Corporate Strategy," 39.

14 Victor Margolin, *Design Discourse: History, Theory, Criticism* (Chicago: University of Chicago Press, 1989).

15 Christopher Lorenz, "Harnessing Design as a Strategic Resource," *Long Range Planning* 27, no. 5 (1994): 74, DOI: [https://doi.org/10.1016/0024-6301\(94\)90229-1](https://doi.org/10.1016/0024-6301(94)90229-1); Pia Geisby Erichsen and Poul Rind Christensen, "The Evolution of the Design Management Field: A Journal Perspective," *Creativity and Innovation Management* 22, no. 2 (2013): 112, DOI: <https://doi.org/10.1111/caim.12025>.

16 Birgit H. Jevnaker, "How Design Becomes Strategic," *Design Management Review* 11, no. 1 (2000): 46, DOI: <https://doi.org/10.1111/j.1948-7169.2000.tb00286.x>.

17 Brigitte Borja de Mozota, "The Four Powers of Design: A Value Model in Design Management," *Design Management Review* 17, no. 2 (2006): 45, DOI: <https://doi.org/10.1111/j.1948-7169.2006.tb00038.x>.

18 Michele Simoni, Cabirio Cautela, and Francesco Zurlo, "Product Design Strategies in Technological Shifts: An Explorative Study of Italian Design-Driven Companies," *Technovation* 34, no. 11 (2014): 704, <https://doi.org/10.1016/j.technovation.2014.06.002>.

19 Manzini and Vezzoli, "A Strategic Design Approach," 856.

20 In 1978, Deng Xiaoping (邓小平, then the leader in China, began a program of economic reform toward a market-oriented economy and the opening of China's market to the outside world. The famous four-character policy "改革开放" (reform and opening up) was promulgated at the Third Plenum (of the Eleventh Central Committee of the China's Communist Party) in December 1978.

21 The policy suggested ways to acquire advanced knowledge from developed countries through foreign direct-investment spillover (FDI). The objectives included building an innovative team, learning-by-doing, and absorbing knowledge via various channels with support from government. Xiaohong Wang, "The Start-Point of Introduction, Digestion, Absorption, and Innovation," *People's Daily*, April 3, 2006, <http://theory.people.com.cn/GB/49154/49155/4262325.html>.

22 Shaun Rein, *The End of Copycat China: The Rise of Creativity, Innovation, and Individualism in Asia* (Hoboken, NJ: John Wiley & Sons, 2014), 134–52.

23 "China's economic reform has been successful, making it become a major economic power. Largely [relying] on low-cost investment, cheap and abundant labor, and use of natural resources to support growth, China has faced a number of challenges including high debt to GDP, demographic changes, and environmental degradation, along with income inequality, corruption, and rent-seeking

light of the surge in demand for consumer products, Chinese manufacturers had to build up their industrial base, so they focused on increasing productivity first and foremost to bridge the gap between supply and demand. Introducing technologies, processes, and management structures from foreign countries – known as "Introduction-Absorption-Innovation" – was the national innovation policy.²¹ This kind of innovation was promoted during the Open Policy's first thirty years, and led to the perception that products "Made in China" were copycats by nature.²²

In 2010, China established "Innovation-Driven Strategy" as part of its national development strategy. As of that moment, companies were expected to play a new role – and one for which they may not be well enough equipped even today. In 2012, China entered another new stage in its development, defined as the "New Normal."²³ Challenged by the economic slowdown, the Chinese government shifted the focus of its innovation strategy to autonomous innovation. This was evidenced by a series of policy enactments, including "Mass Entrepreneurship and Innovation" in 2014,²⁴ "Made in China 2025" in 2015,²⁵ and "Developing Service-Oriented Manufacturing" in 2016.²⁶ In response, as scholar Justin Tan points out, Chinese entrepreneurs and top managers, especially those from private enterprises, have shown unprecedented interest in innovation and risk-taking.²⁷ Li and Tang show that not only do Chinese CEOs play a critical role in risk-taking, that role is required to drive innovation. CEOs' readiness to adopt strategic design might therefore make a difference when it comes to successfully implementing innovation policies in their firms.²⁸ With its strong industrial base and growing innovation capacity, China is reportedly becoming "a New Innovation Powerhouse," turning into an R&D machine, and rapidly catching up with the US.²⁹

Because innovation is a relatively new topic for China, questions have arisen about how to apply China's new innovation strategy, given the background, capabilities, and resources at the industry and firm level. Once the barriers to the adoption of strategic design in China have been explored and solutions for their removal applied, organizations in China are more likely to become innovative.

Barriers to Adopting Strategic Design: A Review

There is a significant body of research examining the barriers to using design in business operations. We searched One Search³⁰ using "barriers and design" as keywords, combining these with other words such as "product innovation," "strategic design," "design-led innovation," and "design-driven innovation." This search produced one hundred and twenty-six publications. We reviewed all of these, and from them, chose the sixteen studies that explicitly used the term "barriers" for potential analysis in this article. After considering the topics covered by each of these publications, we then divided them into two categories: 1) barriers to strategic design adoption in terms of business strategy, design capacity, and design knowledge; and 2) barriers to design implementation related to product innovation and co-creation (Table 1). In addition to the references that fell into one or the other category, some studies explored the issues from both sides (Figure 1).

The earliest studies focused on managing product development within the changing context of business operations.³¹ In the early 1990s, the increasing need and potential for dynamic co-creation led to the emergence of research and findings related to the barriers and enablers of co-design in product innovation.³² These studies generally covered the role played by design in business, and the existing knowledge that business stakeholders had about design and design practice.³³ Many of the in-depth studies accumulating in the field found that well-grounded design capabilities and solid design knowledge were major contributing factors to successful innovations. Researchers looking at firms' design capability found that

Table 1. Previous studies on the barriers to adopting design in business.

	Publication	Focus	Methodology	Field
Barriers to Implementation:				
Product innovation				
1	Dougherty (1992)	Examine the difficulties associated with linking technological and market possibilities via product design by focusing on the shared interpretive schemes people use to make sense of product innovation.	Qual	Product innovation
2	Freel (2000)	Address the nature and extent of the constraints or barriers to innovation in small manufacturing firms.	Quant	Business management
3	Millward & Lewis (2005)	Identify and analyze the main barriers to new product development within small manufacturing companies.	Qual	Product innovation
4	Hassanien & Dale (2012)	Review the role of new product development (NPD) in event venue operations by drawing on existing literature. Acknowledge product innovation as an under-researched field in event venues and explore this within the context of seven diverse operations.	Qual	Product innovation
Co-creation & co-design				
5	Kleinsmann & Valkenburg (2008)	Explore the barriers to and enablers for the creation of shared understanding during a co-design process in industry.	Qual	Product design
6	Lempiälä (2010)	Examine the barriers and obstructive practices for out-of-the-box creativity in group ideation.	Qual	Product innovation
Barriers to Strategic Design:				
Integrating design into business				
7	Lorenz (1994)	Explore various potential roles of design in strategy, the nature of the voyage of executive discovery—or rediscovery—of these roles, and the implications for management.	Qual	Design & strategy management
8	Filson & Lewis (2000)	Identify the strategic, operational, and cultural reasons SMEs are less willing to take advantage of design as a business resource.	Qual & Quant	Design management
9	Brazier (2004)	Outline initiatives that overcome the inertia of perceiving design as a low priority and an expensive luxury.	Qual	Design management
10	Goffin & Micheli (2010)	Explore different perceptions of good design from designers and NPD managers and the ways to achieve it. Illustrate the challenges in attempting to introduce industrial design into a structured NPD approach.	Qual	Research management
11	Lee & Evans (2012)	Examine design's role in the FMCG industry. The barriers and drivers to the adoption of 'designerly' approaches in the FMCG industry	Qual & Quant	Design management
Building design capacity				
13	Jevnaker (2000)	Describe three approaches to managing assets that allow organizations to leverage design resources more effectively.	Qual	Design management
14	Knox (2002)	Explore the distinctive behaviors and organizational capabilities that enable firms to innovate successfully.	Qual	Product innovation
Learning design knowledge				
15	Carlile (2002)	Explore the premise that knowledge in new product development proves both a barrier to and a source of innovation.	Qual	Knowledge management
16	Gieskes & Hyland (2003)	Provide insights into factors that hinder learning and recommendations for effective intervention strategies that may help remove barriers to learning.	Quant	Product innovation

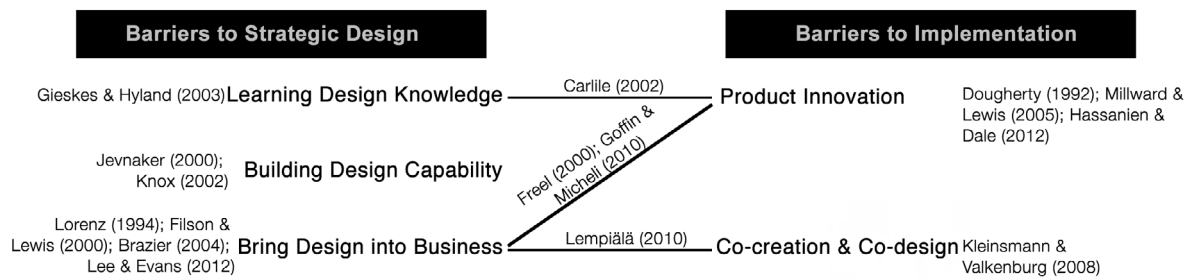


Figure 1 The variety of focal aspects in previous studies. Copyright © 2017 by Sylvia Xihui Liu and Cees de Bont.

activities. In recent years, China's economic growth rate has fallen from the historic double-digit rate to 6–7%." In May 2014, Xi Jinping, Chairman of China, used "New Normal" to illustrate the situation and Chinese Government has attempted to rebalance its slower economy with more sustainable development. See Jing Zhang and Jian Chen, "Introduction to China's new normal economy," *Journal of Chinese Economic and Business Studies* 15, no. 1 (2017): 1.

24 Mass entrepreneurship and innovation was proposed by Premier Li Keqiang at the 2014 Summer Davos in Tianjin. It has been viewed as a new engine for China's economic growth.

25 The "Made in China 2025" plan was announced by the State Council on May 19, 2015. It was the first ten-year action plan to focus on promoting manufacturing. The plan proposed a three-step strategy aimed at transforming China into a leading manufacturing power by the year 2049, which marks the 100th anniversary of the founding of the People's Republic of China.

26 In July 2016, the Ministry of Industry and Technology Information and the National Development and Reform Commission released the action plan to further promote the development of service-oriented manufacturing.

27 Justin Tan, "Innovation and Risk-Taking in a Transitional Economy: A Comparative Study of Chinese Managers

an efficient use of external resources and distinctive organizational behavior underpinned efficient designs.³⁴ With higher levels of design knowledge come enhanced design capabilities that enable design's greater involvement in the early stages of strategy planning. Studies on barriers to learning design knowledge emerged to specify the topic.³⁵

We developed a holistic view of the foci in these earlier studies according to the two types of barriers – adoption and implementation – noted above. As Figure 1 illustrates, most of the research concentrated on the barriers to adoption associated with integrating design into business practice. In addition, all of the studies in Figure 1 emphasized the relevant firms' business propositions rather than exploring barriers caused by either the external environment or individual actors' contributions. This implies two potential areas for further research. First of all, the external environment of the business seeking to adopt strategic design should be considered. Although some studies have touched upon cross-cultural issues, they are usually presented from an in-company perspective. Second, the mindset and design knowledge held by key stakeholders – both of which are factors that may create or represent certain limitations – have seldom received attention beyond the operational level challenges associated with product innovation and co-creation.

Barriers to innovation have cultural underpinnings, and the external environment of a firm and the scope of strategic design actors' expertise are products of cultural values to a certain degree. Unlike the different cultures found across Europe and beyond, which are often described as individualistic, Chinese society – like many other Asian cultures – tends to be more collectivistic. Asian societies are also more prone to authoritarianism in business leadership, which may have advantages when it comes to running a routine type of operation.³⁶ However, it may not be the most effective leadership style when it comes to exploring and defining new inroads for innovation. Innovation requires an environment in which ideas can flourish, mistakes can be made, and individuals have the freedom to experiment.³⁷

Research Methodology

In order to explore and define potential barriers to strategic design in China, we conducted twenty interviews to access richly descriptive data. The twenty interviewees consisted of ten design clients and ten design suppliers.

Sampling

We used purposeful sampling³⁸ to identify pioneering design-led firms that link strategic and operational activities through design-led propositions.³⁹ The twenty cases were located in Beijing, Shanghai, Hangzhou, Guangzhou, and Shenzhen – the leading economic and design cities in China. The ten design clients were selected from a variety of design-intensive industries, including automotive, consumer electronics, lifestyle products, and Internet services. Each of these

corporations showed a range of variations in their ownership structures. The ten design suppliers consisted of seven leading design strategy consultancies and three innovation consultancies (Table 2).

Table 2. Corporations interviewed.

Section	Establishment	Ownership	Firm size	Interviewee
A Consumer electronics	1984	State owned, joint-venture	61,000+	Design director
B Design consultancy	1992	Private	200+	CEO
C Design consultancy	1994	Private, joint-venture	40+	CEO
D Automobile	1997	State owned, joint-venture	45,000+	Design director
E Consumer electronics	1997	Private, joint-venture	800+	Design director
F Design consultancy	1999	Private	500+	CEO
G Internet service	2000	Private, joint-venture	70,000+	Design director
H Design consultancy	2000	Private	200+	CEO
I Design consultancy	2000	Private	30+	CEO
J Lifestyle products	2001	Private	300+	CEO
K Consumer electronics	2003	Private	1,000+	CEO
L Automobile	2004	State owned, joint-venture	46,000+	Design director
M Design consultancy	2004	Private	800+	Design director
N Innovation consultancy	2007	Private, joint-venture	500+	CEO
O Consumer electronics	2009	Private, joint-venture	100+	CEO
P Automobile	2010	State owned, joint-venture	22,000+	Design director
Q Consumer electronics	2010	Private, joint-venture	80,000+	CEO
R Design consultancy	2010	Private, joint-venture	90+	CEO
S Innovation consultancy	2013	State owned, joint-venture	50+	CEO
T Innovation consultancy	2014	State owned, joint-venture	60+	CEO

Data Collection

We used data triangulation to confirm data validity in this study. The data were collected using multiple methods, including site observations, documents, and semi-structured interviews.

We conducted semi-structured face-to-face interviews to collect detailed descriptions.⁴⁰ The interviewees were top-tier strategic design leaders at their firms – either CEOs or design directors. Our interview questions targeted firms’ backgrounds, organization, design teams, development, and challenges. We queried the role of design in each firm’s operational and strategic activities so that interviewees could speak about how design – and strategic design, specifically – contributed to projects and any changes within the organization and its environment. This included asking about innovation projects and the barriers to utilizing strategic design in those projects. At the end of the interviews, we asked further questions about strategic collaborations. All of the interviews lasted between one and a half and two hours, and were conducted at each firm. Most of these interviews we conducted in Chinese. The interviews were accompanied by site visits for direct observation. Besides these interviews, we collected documents – company brochures/white papers, financial reports, and development plans – for objective data support.

and Entrepreneurs,” *Journal of Business Venturing* 16, no. 4 (2001): 359–76, DOI: [https://doi.org/10.1016/S0883-9026\(99\)00056-7](https://doi.org/10.1016/S0883-9026(99)00056-7).

28 Jiatao Li and Yi Tang, “CEO Hubris and Firm Risk Taking in China: The Moderating Role of Managerial Discretion,” *Academy of Management Journal* 53, no. 1 (2010): 45–68, DOI: <https://doi.org/10.5465/AMJ.2010.48036912>.

29 David Wertime, “It’s Official: China is Becoming a New Innovation Powerhouse,” *Foreign Policy*, February 7, 2014, <http://foreignpolicy.com/2014/02/07/its-official-china-is-becoming-a-new-innovation-powerhouse>; Juro Osawa and Paul Mozur, “The Rise of China’s Innovation Machine,” *Wall Street Journal*, January 16, 2014, <https://www.wsj.com/articles/the-rise-of-china8217s-innovation-machine-1389900484>.

30 OneSearch provides access to local and remote resources, such as books, journal articles, and digital objects. It includes resources found in Hong Kong Polytechnic library books, journals, AV materials, collections, e-books, e-journal articles, and other resources held in University Grants Committee (UGC) funded libraries.

31 Dougherty, “Interpretive Barriers,” 195–97; Freel, “Barriers to Product Innovation,” 62; Millward and Lewis, “Barriers to Successful New Product Development,” 382; Hassanien and Dale, “Drivers and Barriers,” 82–84.

32 Kleinsmann and Valkenburg, “Barriers and Enablers,” 372; Lempiälä, “Barriers and Obstructive Practices,” 225.

33 Lorenz, “Harnessing Design,” 73–74; Anna Filson and Alan Lewis, “Barriers between Design and Business Strategy,” *Design Management Journal* 11, no. 4 (2000): 49, DOI: <https://doi.org/10.1111/j.1948-7169.2000.tb00148.x>; Sally Brazier, “Walking Backward into Design: Support for the SME,” *Design Management Review* 15, no. 4 (2004): 63, DOI: <https://doi.org/10.1111/j.1948-7169.2004.tb00184.x>; Keith Goffin and Pietro Micheli, “Maximizing the Value of Industrial Design in New Product Development,” *Research-Technology Management* 53, no. 5 (2010): 30; Younjoon Lee

and Dr. Martyn Evans, "What Drives Organizations to Employ Design-Driven Approaches? A Study of Fast-Moving Consumer Goods Brand Development," *Design Management Journal*, no. 1 (2012): 76, DOI: <https://doi.org/10.1111/j.1948-7177.2012.00035.x>.

34 Jevnaker, "How Design becomes Strategic," 42; Simon Knox, "The Boardroom Agenda: Developing the Innovative Organisation," *Corporate Governance: The International Journal of Business in Society* 2, no. 1 (2002): 28, DOI: <https://doi.org/10.1108/14720700210418698>.

35 Paul R. Carlile, "A Pragmatic View of Knowledge and Boundaries: Boundary Objects in New Product Development," *Organization Science* 13, no. 4 (2002): 443, DOI: <https://doi.org/10.1287/orsc.13.4.442.2953>; Jose F.B. Gieskes and Paul W. Hyland, "Learning Barriers in Continuous Product Innovation," *International Journal of Technology Management* 26, no.8 (2003): 860, DOI: <https://doi.org/10.1504/IJTM.2003.003394>.

Figure 2 Barriers reported in this study. S1–S6 are limitations shared by Chinese and Western firms, while C1–C6 are those reported by Chinese firms alone. The numbers in brackets refer to the frequency with which the constraint was mentioned, out of a total of twenty cases. The asterisks (*) refer to the new barriers explored at the Chinese firms, compared to the previous studies in Table 1. Copyright © 2017 by Sylvia Xihui Liu and Cees de Bont.

Data Analysis

We recorded, transcribed, and translated the interviews for analysis. We coded major findings into pre-defined categories. We then reported the coded findings. To control reliability and validity, two researchers were responsible for coding the data separately at the same time. We compared their results, and, to confirm data reliability, we chose the barriers common to both. Combined with data collected from other methods, our findings report on twenty cases in total. Through case comparison, we created a summary of the barriers mentioned by the interviewees. Later, these findings were compared with those relating to barriers reported in Western firms, to clarify the barriers unique to Chinese firms. In our discussion, we will provide insight into the underlying patterns in the data and respond to the key research questions that guided this study.

Results: Barriers to Adopting Strategic Design in Chinese Firms

Through transcription, translation and coding, we found twelve barriers inhibiting Chinese firms from explicitly adopting design methods and practices (Figure 2). In addition to corroborating existing categories, we defined the external environment as a new focus category. The frequency that each barrier was mentioned by the twenty interviewees ranged from one to fourteen times. Of the twelve barriers we identified, six had been reported in earlier literature on related topics – the remainder we uncovered during this study. Of these newly-discovered barriers, five were mentioned by more than seven interviewees, and thus represent broadly recognized constraints. A particularly valuable finding was that half of the newly-identified barriers were associated with the environment external to the firm. This suggests that 1) previous studies had concentrated on the corporate or project level, and 2) there were distinct barriers arising from the external environment that may be unique to Chinese firms.

Barriers Common to Western and Chinese Firms

A comparison of the results shown in Figures 1 and 2 revealed a total of six barriers (S1–S6, Figure 2) that are similar to those reported in the previous studies outlined in Table 1. Table 3 outlines the details of these six barriers and how they compare with findings reported in the Western context.

S1. Unqualified designers graduating from the current education system (14)

We considered responses such as "lacks professional skills" and "cannot work independently on a practical design project" as barriers that we could associate directly with designers. The findings reported in previous Western studies indicated similar limitations.⁴¹ However, the Chinese interviewees explicitly indicated that the source of these issues was the current design education system, which they said

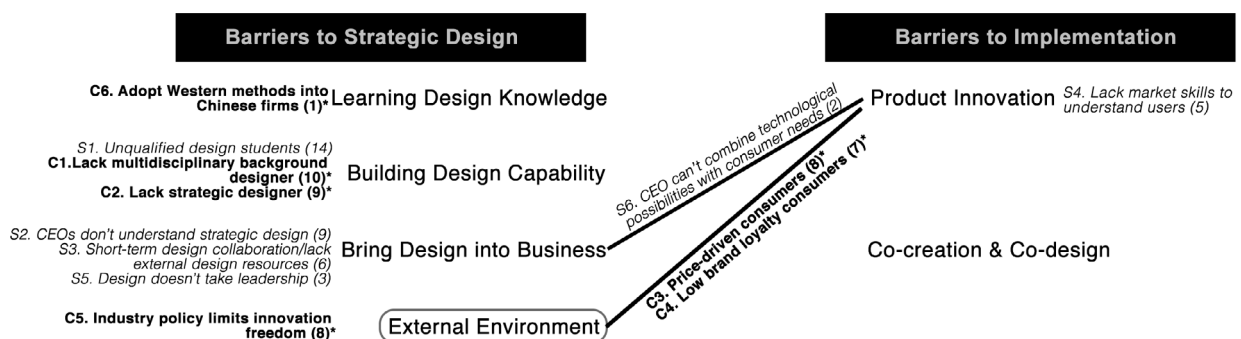


Table 3. Barriers common to Chinese and Western firms.

Barriers reported in this study	FREQ	Barriers reported in previous studies	Publication
S1. Unqualified graduate designers from current design education system	14	Internal business skills need improving. Difficulty finding suitably qualified designers. Limited applicable experience/knowledge. No personnel with the skills to develop new products.	Freel (2000); Brazier (2004); Kleinsmann & Valkenburg (2008); Hassanian & Dale (2012)
S2. CEOs don't understand strategic design	9	No clear strategy underpinning new product development. Little understanding of the product development process. CEOs do not see design as a route to competitive advantage.	Filson & Lewis, (2000); Brazier (2004)
S3. Short-term design collaborations are rare	6	Lack of resources dedicated to R&D and marketing tasks. Lack of trust in outside services and service organizations. Lack of information on markets and external opportunities.	Filson & Lewis (2000); Freel (2000); Kleinsmann & Valkenburg (2008).
S4. Lack of skills to understand users and markets	5	Lack of customer responsiveness to new offerings.	Hassanian & Dale (2012)
S5. Design is not given the ability to lead	3	Designers tend to be seen as third-class citizens, rated lower than engineers. Top managers don't see design as essential; no discernible design process. A failure to understand the importance of product design. Freedom to execute the design task is limited. Differences in managers' and designers' perceptions of the role of design in NPD.	Lorenz (1994); Brazier (2004); Millward & Lewis (2005); Kleinsmann & Valkenburg (2008); Goffin & Micheli (2010)
S6. CEO cannot combine technological possibilities with consumer needs	2	They are often unaware of recent technological developments that have direct relevance to the development of company products.	Filson & Lewis, (2000)

concentrates on teaching a broad range of design skills, but does not teach their practical application. As a result, although graduates may appear familiar with design theories, approaches, and methodologies, often they are unable to apply what they have learned in practice. The interviewees also suggested that design communication was a necessary skill that was being ignored by the current education system.

S2. CEOs do not understand strategic design (9)

CEOs lack basic knowledge of the role design plays in new product development and they may not view design as a critical factor to enhance competitiveness.⁴² They tend to consider design as a cost, instead of an activity that generates profits. Most of them view design as a tool, function, or process to shape the styling of products. In most cases, they are the final decision makers in the design and innovation processes. Their lack of understanding makes it difficult for their firms to grasp and exploit the possibilities of strategic design.

S3. Short-term design collaborations are rare (6)

Insufficient use of external resources was one of the reported barriers to integrating design into business strategy.⁴³ In China, design firms and their prospective clients have little confidence in one another. Corporations prefer to invest conservatively in external design services, as there is less risk involved. In most cases, they are unsatisfied with the outcomes of design projects. They are therefore unwilling to invest further in external design resources. Corporations tend to pay low design fees. This leads to resource constraints at design firms, and the result is that work from the design firms is often disappointing. This negative feedback loop ultimately hinders the potential of strategic design.

36 Since Geert Hofstede's *Culture's Consequences: International Differences in Work-Related Values* (1980, 1984) was published, a wide variety of empirical studies were conducted based on his cultural values framework. In 1998, Michael Morris and his colleagues reported that Chinese managers preferred an avoidance style, which means a low openness to change. This is a significant difference with US managers, who favor a competitive style of conflict. Geert Hofstede, *Culture's Consequences: International Differences in Work-Related Values* (Newbury Park: Sage, 1984); Michael W. Morris et al., "Conflict Management Style: Accounting for Cross-National Differences," *Journal of International Business Studies* 29, no. 4 (1998): 729-47, DOI: <https://doi.org/10.1057/palgrave.jibs.8490050>.

37 Norman P. Archer, Fereidoun Ghazemzadeh, and Markus Hauser, "Organisational Culture and Innovativeness of Firms—An Integrative View," *International Journal of Technology Management* 16, no. 1-3 (1998): 242, DOI: <https://doi.org/10.1504/IJTM.1998.002650>.

38 Lawrence A. Palinkas et al., "Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research," *Administration and Policy in Mental Health and Mental Health Services Research* 42, no. 5 (2015): 533–44, DOI: <https://doi.org/10.1007/s10488-013-0528-y>.

39 Sam Bucolo, Cara Wrigley, and Judy Matthews, "Gaps in Organizational Leadership: Linking Strategic and Operational Activities through Design-Led Propositions," *Design Management Journal* 7, no. 1 (2012): 19, DOI: <https://doi.org/10.1111/j.1948-7177.2012.00030.x>.

40 Michael Meuser and Ulrike Nagel, "The Expert Interview and Changes in Knowledge Production," In *Interviewing Experts*, ed. Alexander Bogner, Beate Littig, and Wolfgang Menz (UK: Palgrave Macmillan, 2009), 20.

41 Freel, "Barriers to Product Innovation," 62; Kleinsmann and Valkenburg, "Barriers and Enablers," 380; Hassanien and Dale, "Drivers and Barriers," 87.

42 Brazier, "Walking Backward into Design," 69; Filson and Lewis, "Barriers between Design and Business Strategy," 49.

43 Filson and Lewis, "Barriers between Design and Business Strategy," 49; Freel, "Barriers to Product Innovation," 62–63; Kleinsmann and Valkenburg, "Barriers and Enablers," 380.

44 Brazier, "Walking Backward into Design," 63; Milward and Lewis, "Barriers to Successful New Product Development," 382; Goffin and Micheli, "Maximizing the Value," 30.

45 Lorenz, "Harnessing design," 73–74.

46 Kleinsmann and Valkenburg, "Barriers and Enablers," 372.

47 Filson and Lewis, "Barriers between Design and Business Strategy," 49.

S4. Lack of skills to understand users and markets (5)

Innovation requires a solid understanding of market dynamics and user needs. Whereas technical capabilities can be found in many organizations, many CEOs do not have the expertise they need to understand users and build brands. As a consequence, the cross-disciplinary integration of technical and marketing skills through strategic design – which requires teams of experts with different backgrounds to collaborate – is a challenge for many Chinese companies.

S5. Design is not given the ability to lead (3)

Previous studies attribute the low status of design in organizations to several factors. These include limited design awareness on the part of managers,⁴⁴ a traditional mindset toward design within organizations,⁴⁵ and the unwillingness of corporate leaders to integrate design into the organizational strategy.⁴⁶ According to our findings, the role of design in Chinese organizations varies according to industry and organizational structure. Automotive companies value the stylistic contribution that designers make, but primarily look to technological advancements – in areas such as digital technologies and geolocation – as resources for innovation. At the more advanced electronics companies, however, designers may be the leaders of innovation projects.

S6. CEOs are unable to connect consumer needs with technological possibilities (2)

CEOs do not have a sufficiently holistic view of their industries. They cannot bring new technological possibilities and changing market needs together.⁴⁷ This barrier was noted by an innovation consultancy. During their collaborative design-driven innovation projects, they found their partner corporations were weak when it came to implementing radical innovation. Many CEOs do not know how to combine user needs with new technologies to generate new meanings for products and services.

Barriers Specific to Chinese Firms

We found six barriers to strategic design adoption that are specific to Chinese firms (C1–C6, Figure 2). Among them, three were categorized as being caused by the environment outside the firms – a situation that we have not seen reported in other studies. In addition to the external environment, a lack of both design knowledge and design capability was mentioned as barriers to strategic design adoption.

C1. Designers lack multidisciplinary backgrounds (10)

A lack of multidisciplinary among designers impedes the growth of a firm's design capability and its development into a design-led organization. Given the complex nature of innovation processes, and China's transition to a knowledge economy, effective designers must be able to take a complex variety of concerns into account. Designers with more than one kind of expertise would be better equipped to participate in interdisciplinary teams that include engineers, other design professionals, marketers, sales representatives, top managers, and any relevant stakeholders. Organizations need to involve individuals with multidisciplinary skills to prepare for the adoption of strategic design.

C2. Lack of strategic designers (9)

The innovation consultancies, in particular, voiced the urgent need for strategic designers and designers with critical thinking skills. Very few of the designers that have graduated from design schools in China seem to have been educated in strategic design and objective analysis. In addition to these gaps, interviewees also mentioned weaknesses in design leadership and the sway of local parochialism as limitations preventing design – and designers – from leading innovative business strategy.

C3. Consumers driven by price (8)

In the new economic climate – and the increased spending capacity it provides – the mindset of Chinese consumers appears to be changing. Some demonstrate both old behaviors and new behaviors simultaneously. Although many are still mindful of price when buying certain products, those same consumers have also come to appreciate luxury brands. Consumers want to buy more with their money instead of concentrating on quality, and so in most cases, price factors are dominant in purchase decisions. This cost-consciousness deters corporations from investing in design and innovation, which the majority of CEOs view as a major risk.

C4. Low brand loyalty (7)

Owning a luxury brand product seldom leads to loyalty for that specific brand. Chinese consumers can generally differentiate between luxury brands and non-luxury brands, but they have not yet developed more refined attitudes regarding specific brands. As a consequence, many Chinese corporations cannot rely on a loyal customer base when introducing an innovative product or service into the market. As a result, even though corporations utilize various user research methods, they find it difficult to predict Chinese consumers' buying behavior, as they are both conservative and open-minded at the same time.

C5. Industry policy limits freedom to innovate (8)

Industry policies limit innovative freedom, create inertia by absorbing innovations, and do nothing to protect novel innovations once they have been developed. Industry policies typically include preferential benefits including tax relief, financial subsidies, free space, and training support. For example, automobile firms are currently contending with the shift toward electric cars. The Chinese Government introduced a series of measures intended to encourage innovation and development in the field, but those measures only served to control and limit the nature and extent of any innovation the automakers might independently attempt. Interviewees also criticized the inertia created by earlier industrial policies that sought to assimilate innovations. The drive towards autonomous innovation was neither mentioned nor encouraged until the financial crisis in 2006. The previous mindset – encouraged by the “Introduction-Absorption-Innovation” policy – is still evident in many organizations today, and it will take time for them to adjust. Furthermore, the fact that new product innovations are not protected from theft in China was seen as a challenge caused by governmental authorities. The interviewees gave examples of innovation projects that were immediately copied after market introduction by other companies from China operating in the Chinese market. The follow-up legal processes only resulted in minor fines for the companies manufacturing the copies.

C6. Problems adopting Western methods at Chinese firms (1)

This was a barrier stated by design professionals. Thanks to overseas studies and international collaborations with companies that have strong innovation capabilities, some Chinese designers have become more proficient in the utilization of advanced design methods. However, introducing these new practices into the local context and combining external views with local knowledge remains difficult.

Discussion and Conclusion

As anticipated at the outset of this research, Chinese firms seeking to utilize design strategically are contending with a number of barriers. Of the twelve we found, eight are directly related to strategic design adoption, while the remaining four

pertain to design implementation within the realm of product innovation. They are either novel barriers, or newly-defined versions of existing barriers. We identified the external environment as a major factor. Industrial policies were often cited specifically in relation to the external environment. In terms of building design capability, reference was made to unqualified junior designers, the lack of multidisciplinary designers, and the scarcity of strategic designers. Unqualified juniors were mentioned in previous studies of Western firms, while the lack of multidisciplinary amongst designers and the dearth of strategic designers were newly-identified barriers. Deficiencies in design capabilities hinder the hiring of strategic designers, thereby also hampering design awareness and the status of design in an organization. All the barriers to bringing design into business and utilizing strategic design for product innovation are the same as those reported in previous studies. This shows that the findings of previous studies on barriers found to be of hindrance are rather universal. Only one interviewee talked about the difficulty of adopting Western methods at Chinese firms. This may suggest that design-led innovators are aware of the specific nature of the context of China. We also discovered that consumers' price-driven concerns and low brand loyalty are also barriers inhibiting the adoption of strategic design. They were not explored in previous studies and may be seen as typical for China, representing immature consumer behavior in a fast-growth business environment and a very dynamic society.

Based on the above findings, we identified key stakeholders involved with the barriers to strategic design. Besides firms, CEOs, designers, and managers – which were identified in previous studies – three novel actors were defined: design educators, consumers, and policymakers. In line with this, we suggest that there are three major challenges confronting design educators: 1) enhancing specialized skills, multidisciplinary knowledge, and strategic thinking for different levels of designers; 2) cultivating design knowledge for CEOs; and 3) nurturing consumers' design perceptions. Professional design education should respond to the demands for junior designers with concrete skills in a specific design field. Those designers who graduate from universities should have received some on-the-job-training, preferably with exposure to multidisciplinary working environments. Some of the leading design schools in China have given thought to this and have adjusted their curricula and programs accordingly. For example, design studio practice has replaced traditional education for senior undergraduate students at Tsinghua University, the Central Academy of Fine Arts, and the Guangzhou Academy of Fine Arts. New multidisciplinary programs, such as International Design and Business Management (ID&BM) have been established at Hong Kong Polytechnic University and Tongji University.

Educating CEOs and consumers who do not traditionally have much background in design is also a priority. New initiatives should be developed that cater to senior managers and CEOs. Examples of such initiatives are the School of Entrepreneurship and Management at ShanghaiTech University, the Executive Master's of Digital Leadership delivered by Hong Kong Polytechnic University, and the Institute of Design Knowledge developed by the Hong Kong Design Centre. Influencing the perceptions and behaviors of Chinese consumers is more difficult and will take more time. Some expect that Chinese consumers will come to appreciate better quality products and services over time and will be able to identify those brands that serve them best.

We believe that several suggestions might be made to policymakers as well. Besides unveiling the policy to set a milestone for a new innovation strategy, policymakers should also think of how to guide businesses towards more innovative practices, and devise promotions that facilitate the linking of industrial practice and innovation policies. This implies two facets of policymaking – its content, and

the approach to creating that content. We suggest that industry, innovation, and design policy content should guide firms towards design-driven innovation via strategic design. In addition, instead of the traditional top-down process, other possible content-generation methods should be considered – from the bottom-up or via co-creation, for example – which would enable industrial practitioners to participate in policy making.

These novel barriers to the adoption of strategic design in China merit further exploration. We still do not fully understand why or when firms need different types of design talent to support design-driven innovation – their needs could be industry-specific, for example. Given the influence that firms' external environments exert over strategic design utilization, it is critical to find out how to take the negative influence of earlier industrial policies – which have stymied innovation – and transform it into the force that stimulates real innovation. In this study we focused on large-size, design-led firms. In light of the role that SMEs play in China's economic development, the place and role of strategic design at SMEs represents a particularly promising area for future research. Barriers to strategic design for firms that possess different levels of design capability, further elaborating on state-owned and private enterprises, is also a valuable topic for further study. In this study, we studied the barriers from the two groups of firms – pioneering, design-led firms and leading design consultancies. The different perspectives and insights from the two groups could be a topic for further study.

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