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Globalization promotes economic and cultural connectivity in this modern capitalist world, driven by innovation, digitalization, and multinational enterprises (MNEs). Digital technologies enable rapid information exchange and business model innovation. Emerging markets offer substantial opportunities for foreign direct investment and market expansion, reshaping the global economy. MNEs have significantly enhanced globalization, intensified competition, and opened up discussions on global impact.

Chapter 2 constructs a framework from 150 articles, highlighting key factors and future research avenues. Chapter 3 examines the success of TikTok, attributing it to business model innovation and leveraging ByteDance’s domestic market. Chapter 4 uses machine learning to study international diversification’s impact on digital products, analyzing 117,535 applications. Chapter 5 uses machine learning to compare international business theories, analyzing data from 2,124 Japanese MNEs. The paper emphasizes innovation capabilities, competitive advantage, and the development of a global knowledge base through globalization, providing references for future research avenues.

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Essays on Internationalization in Modern Capitalism: The Issues of Knowledge Intensity, Chinese MNEs, Digitalization, and Foreign Market Entry Strategies

Yulun Ma

School of Business and Economics
Vrije Universiteit Amsterdam
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Essays on Internationalization in Modern Capitalism: The Issues of Knowledge Intensity, Chinese MNEs, Digitalization, and Foreign Market Entry Strategies

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ESSAYS ON INTERNATIONALIZATION IN MODERN CAPITALISM: THE ISSUES OF KNOWLEDGE INTENSITY, CHINESE MNEs, DIGITALIZATION, AND FOREIGN MARKET ENTRY STRATEGIES

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ter verkrijging van de graad Doctor of Philosophy aan de Vrije Universiteit Amsterdam, op gezag van de rector magnificus prof.dr. J.J.G. Geurts, in het openbaar te verdedigen ten overstaan van de promotiecommissie van de School of Business and Economics op donderdag 5 september 2024 om 9.45 uur in een bijeenkomst van de universiteit, De Boelelaan 1105

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Globalization is “a process driven by economic forces, including the spatial reorganization of production, international trade, and the integration of financial markets” (Sideri, 1997, p. 38). Globalization, or internationalization, can also be viewed as a process that increases the interconnectedness and interdependence of economic and cultural aspects among various societies or countries (Antràs et al., 2023; Brakman et al., 2021). It involves the worldwide exchange of goods and services, knowledge and capital, and ideas and information; amplified by the rise of multinational enterprises (MNEs), it may potentially lead to an integration of global economies and cultures (Baldwin & Evenett, 2020; Bonadio et al., 2021). In the landscape of the contemporary world, the internationalization of MNEs represents a complex and dynamic process influenced by various interrelated factors, such as financial and human capital inputs, research and development (R&D) knowledge and technological advancements, globalization strategies, and shifts in consumer preferences (Rugman & Verbeke, 2004).

Globalization has intensified competition among firms worldwide, exposing them to challenges from both known and potential rivals across the globe. This has led to discussions on the significance of de-globalization influenced by various factors, such as geopolitical considerations (Antràs et al., 2023), technological advancements (Acemoglu & Restrepo, 2018), and the evolving preferences of consumers (Ghemawat, 2011). For example, the trade war between China and the US in 2017 reminded the rest of the world that mercantilist or
protectionist policies can also burden a firm’s cost due to the increased liability of foreignness (Baldwin & di Mauro, 2020; Baldwin & Evenett, 2020; Brakman et al., 2021). As a result, de-globalization is sometimes viewed as a solution in economies’ response to perceived negative consequences such as economic vulnerabilities or cultural homogenization (Brakman et al., 2021).

However, amidst challenges, globalization presents numerous opportunities. According to Adam Smith, capitalism emphasizes the importance of private ownership, investment of capital, and free market exchange (McCreadie & Smith, 2009). From facilitating global knowledge sharing to enabling production and assembly operations across diverse locations, globalization allows businesses to leverage resources and access global markets, thereby enhancing competitiveness and overall performance.

In the contemporary world, modern capitalism is a complex system with various dynamic factors, such as an increasing knowledge base, trends in innovation, globalization, digitalization, and the ongoing growth of emerging MNEs. It thrives on innovation and technological advancement because firms are constantly seeking to provide new products and services to gain a competitive edge in the market (Awate et al., 2015). For example, digital technologies and artificial intelligence (AI) algorithms have revolutionized modern capitalism by facilitating the rapid exchange of information dissemination and initiating the emergence of digital platforms as new business models (Ma & Hu, 2021; Mihalache & Volberda, 2021). Also, there is an increasing trend for the internationalization of MNEs, particularly from emerging markets, with and through advanced technologies such as ByteDance and the TikTok app (Hoskisson et al., 2013). Moreover, the rise of emerging markets characterized by rapid economic growth become integral to modern capitalism and offer abundant opportunities for foreign direct investment.
(FDI), foreign market expansion, and knowledge acquisition (Gaur et al., 2018). This has reshaped the global economic landscape; indeed, it could challenge traditional notions of global economic dominance.

Therefore, in modern capitalism, internationalization is a complex phenomenon that involves a multitude of decisions and uncertainties. This dissertation explores the multifaceted nature of enterprises’ internationalization, with a particular emphasis on the role of knowledge, Chinese MNEs (as changing globalization dynamics show the rising influence of emerging market multinationals), digitalization, and foreign market entry strategies. These topics are, of course, interrelated. Indeed, this interrelatedness is mirrored in the fact that two or more topics figure in many of the studies presented below. For instance, Chapters 2, 3, and 4 are discussed in tandem. For now, in this introduction, I leave this issue at peace. In the concluding chapter, I return to this topic in a brief discussion of the interrelationships revealed in the thesis’s series of studies, with an eye on future research avenues.

1.2 Issues of Knowledge Intensity, Chinese MNEs, Digitalization, and Foreign Market Entry Strategies

1.2.1 Knowledge Intensive Firms

Knowledge, as an intangible resource, accounts for an increasing share of national incomes in both advanced and emerging economies around the world (Lev, 2000). Moreover, technological and organizational changes have played an increasingly important role in the economic and productivity growth of both advanced and emerging economies since COVID-19 (Dieppe, 2021; Görg & Strobl, 2001). Due to intensive competition on the global stage, multinational enterprises are becoming increasingly knowledge driven, actively seeking and developing knowledge...
advantages and leading them to cultivate knowledge assets in non-traditional locations (Dicken, 2003), with a focus on industries such as electronics, automobiles, information technology, and, especially, digital products (Meyer et al., 2011). Specifically, MNEs and internet usage rapidly diffuse new production technologies and techniques through trade, FDI, and other global flows (Dieppe, 2021; Manyika et al., 2014). MNEs, which are network firms in nature, are very important in creating and leveraging value generated from strategic knowledge management practices (Mudambi, 2002). MNEs can manage and benefit from diverse local competencies and knowledge flows through the network of subsidiaries in various locations (Mudambi, 2002). MNEs can also serve as conduits between clusters of subsidiaries (as knowledge providers), facilitating knowledge exchange and innovation (Gupta & Govindarajan, 1991, 2000).

The primary advantage of MNEs is their ability to create, transfer, recombine, and exploit advanced knowledge as resources across national borders (Meyer et al., 2011; Mudambi, 2002, 2008). The wider dispersion of knowledge activities in MNEs enables these firms to engage in knowledge-intensive activities in diverse locations across the globe (McCann & Mudambi, 2005). Moreover, our increasingly digital and global world (Cabigiosu, 2019) has seen a rise in knowledge-intensive firms (KIFs) (Van de Ven, 2005). According to Alvesson (2001, p. 863), KIFs are “firms where most work is said to be of an intellectual nature and where well-educated, qualified employees form the major part of the workforce. The company claims to produce qualified products and/or services.” This definition encompasses a broad spectrum of firms, including professional services firms, R&D companies (Alvesson, 2004), high-tech consultancy firms, and virtual, internet-based knowledge-intensive entities (Newell et al., 2002). Knowledge work, predominantly intellectual and drawing on mental abilities (Kärreman, 2010; Kärreman et
al., 2002; Starbuck, 1992), focuses on creating, applying, and sharing professional and discipline-based knowledge (Newell et al., 2002).

1.2.2 Chinese MNEs

Like commonly cited developed countries (e.g., the Netherlands), knowledge intensive MNEs are also rooted in new knowledge clusters, particularly from emerging economies such as China, and contribute to local and global economies (Meyer et al., 2011). Specifically, internationalization creates opportunities for Chinese KIFs, as one of the representatives of emerging MNEs in Asia, and they are motivated by the government catching-up initiative and the firms’ need for advanced technologies. Thus, they leverage internationalization as a strategic technological catch-up avenue for building innovation capability and consequently increasing competitive advantages (Chen & Li, 2017; Wang et al., 2016). Chinese firms have enhanced competitiveness by actively seeking knowledge in overseas markets, fostering self-innovation, and integrating advanced technologies through robust FDI growth (Jing et al., 2003). Chinese KIFs establish innovation-boosting overseas R&D institutions by leveraging local innovation-friendly environments and also through enhancing market presence by tailoring products and services to local needs (Di Minin et al., 2012; Wang & Xie, 2017). Moreover, Chinese KIFs’ internationalization efforts extend to building strategic innovation networks, which involve pursuits such as mergers and acquisitions (M&A) to obtain strategic assets (Zhao, 2012) and fostering global collaborations (Gassmann & Zedtwitz, 1999) to facilitate knowledge sharing and generation. Thus, Chinese KIFs improve core technological competence, maintain a position at the forefront of industrial innovation, and emerge as influential industrial leaders.

Chinese KIFs acquiring overseas knowledge assets with the “purchase and simply take” method poses challenges (Deng, 2012; Gassmann & Zedtwitz, 1998). However, as Chinese KIFs
gain more internationalization experience, they are increasingly adopting the “global collaborative innovation network” as their core method for obtaining innovation capability and advanced knowledge. This model emphasizes collaborative innovation activities at Chinese KIFs’ overseas R&D centers, reflecting a shift from viewing overseas markets solely as sources of advanced technologies to actively pursuing a global presence (Deng, 2012). In the context of this evolving internationalization, Chinese KIFs showcase diverse organizational structures, ranging from ethnocentric centralized models to global collaborative innovation networks (Jing et al., 2003). To achieve long-term performance, KIFs must sustain and develop self-innovativeness, navigate AI trends to upgrade business models, and accumulate international experience to address challenges in the digital era.

1.2.3 Digitalization

Digitalization entails the systematic arrangement and utilization of algorithms and digital data structures to facilitate the control, communication, and execution of tasks via a series of standardized interfaces, enabling seamless interaction and functionality within digital systems (Autio et al., 2018). The fundamental characteristics of digitalization—namely re-programmability, infrastructural elementality, and intangibility—significantly influence how firms organize themselves for value creation and capture (Autio et al., 2021). Digital communication technologies such as email and video conferencing, which are sometimes seen as synonymous with Information and Communications Technology (ICT) and digitalization in the strategy and international business research fields, promote the dispersal of high-knowledge activities (Yates, 1993). These approaches to communication and coordination are significantly influenced by the nature and extent of local digital in situ capabilities (Autio et al., 2021).
Digital in situ technologies, such as the use of robotics and 3D printing on factory production lines, mainly automate and reorganize local processes, and are thus embedded directly into products and services (Autio et al., 2021; Baskerville et al., 2020). This drives the concentration of low-knowledge activities because of cost competitiveness and the ability to automate routine tasks (Autio et al., 2021; Baskerville et al., 2020). Moreover, as those repetitive activities can render them easily scalable and trainable with big data collected in the global context, MNEs can concentrate on production activities and further lower costs (Cuervo-Cazurra et al., 2019). The effectiveness of digital in situ technologies is largely contingent upon their connectivity to global networks and their ability to leverage local physical assets for value delivery (Autio et al., 2018; Autio et al., 2021).

Given the current state of modern business and society, digitalization emphasizes the importance of information technology advancements driven by increased computing power and the enhanced productivity of computer algorithms (Thompson et al., 2021). These algorithms, which are the foundational element in the evolution of the digital era, are driving improvements in information technology, with an observed shift towards a more global distribution of algorithm development activities (Cantwell & Janne, 2000). As digitalization is combined with globalization trends, a slowdown in algorithm development could hinder progress in digitalization (Thompson et al., 2021) by affecting firms’ ability to harness the full potential of digital technologies and by exacerbating existing disparities in digital readiness and access between different regions and economies (Autio et al., 2021).

Digitalization is also changing internationalization dynamics. However, in the contemporary world, digital platforms facilitate speedy and cost-effective expansion into foreign markets by making products instantly accessible to international markets and enabling interaction
with end customers from diverse overseas markets through instant information exchange (Brouthers et al., 2016; Nambisan et al., 2019). This is due to the fact that digital products have low marginal costs and can be distributed worldwide at relatively low distribution costs (Dattée et al., 2018; Shaheer et al., 2020). A comparison of mobile apps and physical products makes this difference clear. Through participating in digital platforms, firms, especially digital firms such as ByteDance, engage directly with global customers and transcend national borders to expand market reach and further explore new business models (Ma & Hu, 2021). Moreover, they can leverage existing digital platforms, such as Google Play Store and the Apple’s App Store, to connect with potential global partners and end users, thereby accessing new markets and benefiting from established digital ecosystems (Meyer et al., 2023).

According to Meyer et al. (2023), the digital foreign entry strategy enabled through platform and ecosystem infrastructures significantly implicates international business operations and organizations. This strategy could (1) facilitate market access across borders, enabling businesses to reach a broader customer base; (2) lead to cost efficiencies through streamlined processes and resource allocation; and (3) drive innovation in business models, resulting in novel value propositions and revenue streams. Still, there are differences in institutional environments (Cusumano, 2014; Stallkamp & Schotter, 2021) and resource availability across diverse national contexts (Kumar et al., 2021). Thus, firms’ internationalization could potentially reshape how companies compete and operate in this increasingly digitalized and globalized economy (Meyer et al., 2023).

### 1.2.4 Foreign Market Entry

Expanding into foreign markets can be pivotal to a firm’s overall expansion strategy. The extent of ownership of multinational corporations in their foreign subsidiaries represents a critical
decision as these corporations navigate the intricacies of global expansion. Significant research efforts have been directed towards investigating the factors influencing the levels of equity ownership in foreign subsidiaries (Bruneel & De Cock, 2016; Maggi et al., 2022). As the firm aims to penetrate new markets and engage with local customers, the selection of appropriate foreign market entry strategies becomes paramount. Specifically, FDI generally requires extensive cooperation, collaboration, and even knowledge sharing among parent firms and local or global subsidiaries (Barkema & Vermeulen, 1998; Birkinshaw & Pedersen, 2009; Rugman & Verbeke, 2001). FDI involves establishing subsidiaries in foreign countries (Zhao & Zhu, 1998). These approaches require firms with certain degrees of control over operations and may enable further integration into the local market (Johanson & Vahlne, 1977; Lahiri, 2017). The selection of a suitable market entry strategy hinges on various factors, including the desired level of control, the availability of local partners, the regulatory environment, and the competitive landscape in the target market (Peng, 2022). Regardless of the chosen strategy, achieving successful market entry demands meticulous research, strategic planning, and a profound understanding of local market dynamics and consumer behavior (Hollensen, 2007).

Inquiries into the determinants influencing the selection of equity ownership levels in foreign subsidiaries persist as a central focus within the realm of foreign market entry mode research. As evidenced by recent comprehensive reviews conducted by Chhabra et al. (2021) and Maggi et al. (2022), substantial scholarly attention is currently devoted to examining the factors shaping the extent of equity ownership in foreign subsidiaries. Various theoretical frameworks have been posited to elucidate the underlying rationale governing the decision-making process regarding equity ownership levels, encompassing perspectives such as the resource-based view (Barney, 1991), organizational learning theory (Barkema & Vermeulen, 1998), institutional
theory (Di Guardo et al., 2016), transaction cost economies (Williamson, 1986), and network theories (Birkinshaw & Pedersen, 2009; Rugman & Verbeke, 2001). The determination of equity ownership stakes in foreign subsidiaries represents a critical strategic decision for MNEs as they navigate the multifaceted landscape of international expansion. However, consensus regarding the factors influencing the choice of equity degree in foreign subsidiaries remains elusive. Hence, the adoption of modern statistical techniques, such as interpretable machine learning, presents an opportunity to orchestrate an analytical engagement among various theoretical perspectives and aid in discerning their respective explanatory efficacy (Starbuck, 2016; van Witteloostuijn, 2020). This approach is particularly pertinent given the tendency for theories to evolve within isolated paradigms, often characterized by self-referencing and limited interdisciplinary confrontation (Strevens, 2020).

1.3 Theoretical Gap and Research Question of This Dissertation

While there is an increase in internationalization trends, research still needs to advance understanding of the phenomenon. With different core resources (Dunning, 1993, 2014) and internationalization motivations (Deng, 2021), current theoretical insights may not fully explain the internationalization of firms, particularly when these are digital in nature.

Furthermore, existing research focuses predominantly on the internationalization of organizations from the United States and Western Europe. While research has started to emerge on the internationalization of emerging country multinationals (EMNEs) (Pattnaik et al., 2021), there is still a lack of understanding of their internationalization journey, specifically the foreign entry modes, in considering the role of knowledge and digitalization trends. In light of their intricate nature and profound implications, this dissertation endeavors to elevate the existing
comprehension of how knowledge-intensive enterprises can bolster their innovation capabilities through the implementation of knowledge management practices and the exploration of business model innovation. Simultaneously, this dissertation seeks to harness the insights derived from the knowledge of internationalization, specifically focusing on the realm of digital products and the foreign entry modes of MNEs. The goal of this PhD dissertation is to advance understanding of the multifaceted nature of internationalization in modern capitalism by developing research essays on some key facets, including knowledge intensity, Chinese MNEs, digitalization, and foreign market entry strategies.

1.4 Overview of Studies in the Dissertation
To advance understanding of the relationship between the drivers and outcomes of firms’ internationalization, I undertook one theoretical study, which was complemented by three empirical analyses, including a single case study (i.e., Chapters 2, 3, 4, and 5). Each of these scholarly endeavors approaches the central theme from nuanced perspectives, examining varied determinants and manifestations of the internationalization of firms.

Chapter 2 develops a framework for understanding the knowledge management process of Chinese KIFs along with the growth of Chinese inward and outward FDI. Chapter 3 showcases the results of China’s shift to an innovation-driven economy using the concrete single-case company as an example. Chapters 4 and 5 utilize the machine learning technique to advance the research concerning how firms are internationalized and compete with global players, digitally and traditionally. By elucidating various facets of the internationalization processes, the dissertation acknowledges the intricate complexities in global competition dynamics. Figure 1 encapsulates the comprehensive conceptual framework of this thesis.
Figure 1. The research framework of this dissertation
1.5 Theoretical Gaps and Research Questions Addressed in the Dissertation

While four studies fit into the main topic of this thesis, they focus on different literature gaps, and the studies in the dissertation answer associated research questions (Table 1). The diversified research questions reflect the importance of internationalization for firms. Chapter 2 identifies the research gap in understanding the knowledge management activities of Chinese KIFs, which are significantly influenced by Chinese national policies and economic conditions (e.g., Ciabuschi et al., 2017; Mei & Zhang, 2020; Zhou et al., 2017). Additionally, Chinese organizations, particularly KIFs, confront pronounced geopolitical reactions due to China’s governmental involvement in knowledge-intensive high-tech industries (Ai & Tan, 2018; Beamish & Lupton, 2016; Liang et al., 2022). Moreover, the internationalization efforts of Chinese KIFs revolve primarily around advanced knowledge acquisition, transfer, leverage, and creation from developed nations, necessitating the alignment of domestic resources with foreign knowledge reservoirs (Li et al., 2021; Shujahat et al., 2019). However, the extant literature on knowledge management focuses predominantly on either MNEs from developed countries or remains fragmented across various disciplines when addressing Chinese organizations’ engagement with acquired knowledge for international endeavors (e.g., Khavul et al., 2010; Piperopoulos et al., 2018). This study offers insights into the factors, potential influences, and distinctions concerning the knowledge management practices of Chinese KIFs on the global stage.
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Research Gap</th>
<th>Research Question</th>
</tr>
</thead>
</table>
| Two     | Knowledge across borders: A systematic review of research on knowledge management among the Chinese multinational enterprises toward a conceptual framework | Despite increased research on the knowledge management of Chinese multinational enterprises during China’s shift to an innovation-driven economy, a significant gap remains due to the fragmented literature, which lacks a comprehensive understanding of critical factors. | • What are the critical factors influencing knowledge management within Chinese multinational enterprises?  
  • Is there a difference in knowledge management practices among Chinese MNEs based on factors such as size, type, and development stage?  
  • What are the current and potential future outcomes of knowledge management practices within Chinese MNEs? |
| Three   | Business model innovation and experimentation in transforming economies: ByteDance and TikTok | As Chinese organizations increasingly seek internationalization, there persists a noteworthy divergence in their levels of success. There is a lack of understanding regarding both the phenomenon itself and the factors that drive the performance of Chinese organizations venturing abroad. | • How do Chinese organizations (e.g., ByteDance) achieve success on the global stage? |
| Four    | Revisiting the internationalization performance relationship in the digital age with algorithm support: A study of the internationalization of mobile apps | There is a lack of understanding of the impact of international diversification on the performance of digital products, particularly mobile applications. While the existing literature extensively explores the effects on physical products, there is limited clarity on the unique dynamics of digital products. | • How does international diversification influence digital product performance, considering their lower marginal costs and immediate global accessibility? |
| Five    | Using machine learning to organize inter-theory battles: The example of Japanese MNEs’ FDI modes | The notable gap arises from the lack of comprehensive quantitative empirical methodologies that systematically facilitate comparisons of explanatory power between theories in the field of management. This void is accentuated by the common development of management theories within isolated silos, characterized by extensive self-referencing and limited cross-theory confrontation. | • How can research methodologies be adapted for a comprehensive comparison of theoretical explanatory power in the management field, overcoming its protective boundaries? |
Chapters 3 and 4 primarily address the need to understand how firms, specifically KIFs, achieve success on the global stage in the digital era. The logic of global diffusion for digital products (e.g., mobile apps) differs from that of physical products due to their low marginal costs and distribution costs (Dattée et al., 2018; Shaheer et al., 2020). The emergence of digital platforms has even amplified speedy and cost-effective expansion into foreign markets by making digital products instantly accessible to international markets and enabling interaction with end customers from diverse overseas markets through instant information exchange in borderless cyberspace (Brouthers et al., 2016; Nambisan et al., 2019).

With interpretable machine learning, Chapter 5 addresses the research gap concerning the systematic comparison, based on quantitative empirical methodologies, of explanatory power between theories in the field of management. The null hypothesis statistical testing (NHST) approach has encountered criticism (see, for instance, Starbuck, 2016; van Witteloostuijn & Kolkman, 2019). Specifically, by exclusively testing against the null hypothesis, traditional methodologies in general fail to stimulate rigorous inter-theory debates, as articulated by Strevens (2020). So, theories in the management field often evolve within isolated silos and are marked by extensive self-referencing and limited cross theoretical engagement, thereby impeding systematic and collaborative intellectual advancement.

1.6 Methodologies Used
This dissertation comprises one literature review study and three empirical studies, including a single case study. In Chapter 2, I propose that the three-staged knowledge management practices within Chinese KIFs are contingent upon the dynamic evolution of China’s inward and outward FDI. Such a research design facilitates the integration of fragmented insights into how Chinese KIFs acquire advanced knowledge from abroad and synergize it with domestic
resources, especially within the context of global competition and geopolitical conflicts. Chapters 3 and 4 extend the theoretical framework by offering empirical examinations aimed at elucidating the influential factors and mechanisms governing the internationalization of KIFs in the digital age, particularly within the high-tech sector. Chapter 5 employs empirical methods to assess theoretical explanatory power within the management field, leveraging interpretable machine learning techniques to facilitate comparative analysis across different theoretical frameworks.

The methodological choices of the empirical studies in this dissertation complement existing research on the internationalization of firms in several ways. First, the globally diverse sample firms are based on comprehensive datasets. Specifically, the firm sampled in Chapter 3 is about a single-case Chinese firm, ByteDance. Chapter 4 utilizes the global apps rooted in the Google Play platform. In Chapter 5, the selected firms originate from Japan, offering complementary insights into the globalization processes and strategies of Western MNEs and Chinese MNEs. This inclusion is particularly pertinent since Japanese firms, including Japanese KIFs, have successfully entered the global market and serve as globalization exemplars within the non-digital product industry in Asian countries.

Second, the studies in this dissertation use cross-industry samples. Moreover, in Chapters 4 and 5, the sample firms cover the full breadth of the associated app category/Japanese industry. Testing a larger population from multiple industries provides confidence in theoretical generalization. Table 2 presents the methodologies used in the dissertation.
Table 2. Research design of studies in this dissertation

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Method(s)</th>
<th>Data collection and sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two</td>
<td>Knowledge across borders: A systematic review of research on knowledge management among the Chinese multinational enterprises toward a conceptual framework</td>
<td>Systematic literature review; Bibliometric analysis.</td>
<td>• Articles published in top business and management journals over the last 15 years (N = 150).</td>
</tr>
<tr>
<td>Three</td>
<td>Business model innovation and experimentation in transforming economies: ByteDance and TikTok</td>
<td>Case study</td>
<td>• Single Case: TikTok App</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Algorithms: random forest and XGBoost.</td>
<td>• 24 variables (i.e., 23 predictors with 1 dependent variable) obtained from data vendor (AppFigures), Google’s developer manual, and the World Economic Forum.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Explainability techniques: one-way PDP and ICE joint plot, one-way ALE plot, two-way PDP, permutation importance plot, feature interaction strength, SHAP summary plot and dependence plot.</td>
<td></td>
</tr>
<tr>
<td>Five</td>
<td>Using machine learning to organize inter-theory battles: The example of Japanese MNEs’ FDI modes</td>
<td>OLS regression Machine learning:</td>
<td>• 2,124 Japanese firms encompass 19,400 subsidiaries with a year lag variable, resulting in 96,803 subsidiary-year observations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Algorithms: Decision tree, KNN, random forest, XGBoost, and LightGBM.</td>
<td>• 63 variables (i.e., 62 predictors and 1 dependent variable) obtained from Toyo Keizai Inc.’s Kaisha Shikiho database and OECD, World Bank, World Economic Forum, and Hofstede’s national cultural scores.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Explainability techniques: SHAP summary plot and dependence plot.</td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. PDP is the abbreviation of Partial Dependence Plot. 2. ICE is the abbreviation of Individual Condition Expectations. 3. ALE is the abbreviation of Accumulated Local Effects. 4. SHAP is the abbreviation of SHapley Additive exPlanations.
1.7 Contributions

The core objective of this dissertation is to enhance understanding of how firms can successfully achieve internationalization. Recognizing the intricate nature of internationalization, the studies in the dissertation aim to advance theories on the various drivers and influential factors of internationalization. Table 3 provides an overview of the main contributions of each study in this dissertation.

1.7.1 Intended Overall Contributions of the Dissertation

I contribute to research on the drivers of internationalization. Specifically, I advance studies that analyze how various design elements—such as knowledge acquisition and transfer (Ai & Tan, 2018; Ciabuschi et al., 2017; Duanmu & Fai, 2007), business model innovation (Mihalache & Volberda, 2021), internationalization experience and degree (Elia et al., 2020; Fu et al., 2018), and network effects (Adner & Kapoor, 2010; Cennamo & Santaló, 2013)—show how firms internationalize.

I contribute to an understanding of the outcomes of internationalization. I complement previous research about how Chinese KIFs build a strong knowledge base and innovation capability by acquiring, integrating, and creating knowledge through internationalization (Piperopoulos et al., 2018; Wang & Kafouros, 2009) by synthesizing and integrating existing research on the knowledge management processes of Chinese MNEs. Furthermore, I contribute to the conversation on how KIFs can become successful in the global arena. First, I advance insights into how KIFs improve their global performance and gain competitive advantages (Wang et al., 2012; Zhong et al., 2013) by studying how Chinese MNEs build on their country-specific advantages to test new technologies for deployment abroad. Second, this dissertation further contributes to understanding the success of new business models in the
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Main Contribution</th>
</tr>
</thead>
</table>
| Two     | Knowledge across borders: A systematic review of research on knowledge management among the Chinese multinational enterprises toward a conceptual framework | • The study employs bibliometric analysis to categorize top business articles and introduces a framework for Chinese MNEs' knowledge management.  
• Identified gaps point to future research areas, such as architectural competence, offshore R&D centers, diverse innovation strategies, global politics, and Chinese government policies. |
| Three   | Business model innovation and experimentation in transforming economies: ByteDance and TikTok | • The study highlights the global success of an app owned by a Chinese digital firm, emphasizing the home market’s role in fostering innovation and unique business models.  
• It underscores innovation as a blend of imitation and originality, emphasizing ongoing experimentation’s pivotal role in shaping both domestic and global strategies. |
| Four    | Revisiting the internationalization performance relationship in the digital age with algorithm support: A study of the internationalization of mobile apps | • The study enhances understanding of internationalization and performance by focusing on digital product internationalization. Additionally, it broadens research on global competition by exploring app rivalry on digital platforms.  
Methodologically, the study demonstrates machine learning’s relevance in international business research, thereby expanding analytical avenues. |
| Five    | Using machine learning to organize inter-theory battles: The example of Japanese MNEs’ FDI modes | • The study advances the systematic comparison of theories in international business beyond their frameworks. It underscores machine learning’s efficacy for such comparisons, emphasizing its strengths in analyzing high-dimensional data and producing easily interpretable results. |
digital era by considering the drivers of international success for digital products such as mobile apps through leveraging global digital platforms for internationalization.

1.7.2 Individual Contributions

The individual contributions of the four studies collectively contribute to the overarching contribution of this dissertation. Primarily, Chapter 2 employs bibliometric analysis to map articles published in top business and management journals into six major clusters and offers an overview of the relationships among the articles on this topic. Furthermore, the study develops an integrative framework that considers the content, process, and outcomes of Chinese MNEs’ knowledge management research. The synthesis of the literature reveals several gaps, suggesting potential future research directions, including (1) focus on architectural competence; (2) opening new offshore R&D centers and integrating overseas subsidiaries into the global Chinese R&D network; (3) multiple innovation strategies; (4) the unfavorable global political environment; and (5) innovation-encouraging policies initiated by the Chinese government.

In Chapter 3, I discuss the success of a Chinese firm that developed one of the most globally downloaded apps. This chapter extends our understanding of the significance of the home country market for digital products and breaks new ground in existing research. It reveals that the home country market can serve as a crucial testing ground, fostering experimentation and facilitating the development of innovative business models subsequently deployed on the global stage. Chinese KIFs utilize AI technologies and the home market by emphasizing innovation as a dynamic blend of imitation and originality to achieve business model innovation. It also highlights how organizations offer a unique value proposition by creatively integrating elements from existing business models. Furthermore, since China is one of the largest cyber markets, it stresses the pivotal role of ongoing experimentation within
the home country market, emphasizing its ability to shape new avenues for value creation and capture.

Chapter 4 advances research on the internationalization–performance relationship (Chen & Tan, 2012; Ruigrok et al., 2007) by shifting attention to the internationalization of digital products. It complements research on global competition between platform owners by examining the rivalry among apps within global digital platforms. It also contributes methodologically by showcasing the applicability of machine learning in international business research, expanding analytical possibilities.

Lastly, Chapter 5 contributes to the systematic comparison of the explanatory power of alternative theories in the field of international business by transcending the confines of the theories’ silo. It shows the potential of machine learning as an ideal toolkit for organizing systematic inter-theory comparisons. Specifically, I highlight two key advantages: (1) machine learning is particularly adept at analyzing high-dimensional data, offering a comprehensive approach, and (2) interpretable machine learning metrics generate easily interpretable outputs.

Overall, this dissertation elevates the discourse on internationalization by delineating key drivers and outcomes pertinent to MNEs. The research underscores the efficacy of employing machine learning techniques to interpret vast and often high-dimensional datasets, given the interconnectedness among firms (van Witteloostuijn & Kolkman, 2019). Consequently, the interpretable machine learning methodologies employed in this thesis diverge from conventional “null hypothesis” testing statistical approaches, demonstrating potential in bridging the fragmented landscape of isolated management theories.
1.8 Contents of the Dissertation

The subsequent sections of this dissertation are structured as delineated below. I first present
the theoretical study (Chapter 2), followed sequentially by three empirical studies (Chapters 3,
4, and 5). Moreover, Table 4 shows the outputs of the studies in this thesis. Concluding the
dissertation, the final chapter encapsulates a synthesis of overarching findings, contributions,
constraints, and prospective avenues for future research endeavors in this scholarly thesis.
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Authors</th>
<th>Methodology</th>
<th>Conference presentation</th>
<th>Journal publication status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two</td>
<td>Knowledge across borders: A systematic review of research on knowledge management among the Chinese multinational enterprises toward a conceptual framework</td>
<td>Yulun Ma, Oli Mihalache, Arjen van Witteloostuijn, and Peter Ping Li</td>
<td>Systematic literature review</td>
<td>Academy of Management Annual Meeting (2021); EIBA Annual Conference (2022)</td>
<td>Revise and Resubmit at <em>International Business Review</em></td>
</tr>
<tr>
<td>Three</td>
<td>Business model innovation and experimentation in transforming economies: ByteDance and TikTok</td>
<td>Yulun Ma and Yue Hu</td>
<td>Case study</td>
<td></td>
<td>Published at <em>Management and Organization Review</em></td>
</tr>
<tr>
<td>Five</td>
<td>Using machine learning to organize inter-theory battles: The example of Japanese MNEs’ FDI modes</td>
<td>Yulun Ma, Oli Mihalache, Mashiho Mihalache, and Arjen van Witteloostuijn</td>
<td>Quantitative: <em>Machine learning and OLS</em></td>
<td>Accepted to present at SMS Annual Conference (2024)</td>
<td>To be submitted to <em>Journal of International Business Studies</em></td>
</tr>
</tbody>
</table>
CHAPTER 2

KNOWLEDGE ACROSS BORDERS: A SYSTEMATIC REVIEW OF RESEARCH ON KNOWLEDGE MANAGEMENT AMONG THE CHINESE MULTINATIONAL ENTERPRISES TOWARD A CONCEPTUAL FRAMEWORK

ABSTRACT
As China is pushing toward transforming into an innovation-driven economy, research on knowledge management of Chinese multinational enterprises (MNEs) has increased considerably in the past 15 years. However, due to the fragmented nature of this literature, there is a serious lack of understanding about the critical factors of knowledge management within Chinese MNEs. In this systematic review, we develop a conceptual framework regarding the salient factors of knowledge management in terms of holistic content (i.e., six topical clusters) and dynamic process (i.e., three evolutionary phases). We achieve this by synthesizing and integrating insights from 150 articles published in the last 15 years in top business and management journals. Further, we identify several promising avenues for future research, including the shift in research focus from knowledge exploitation to knowledge exploration and the trend in knowledge management in the digital era.

Keywords: Chinese multinational enterprises; knowledge management; globalization; innovation; digital era; framework
2.1 Introduction

Over the last few decades, China’s economic growth can be attributed to its major efforts to upgrade its knowledge base. Government policies have played a key role as they have encouraged Chinese firms to enhance their operations with knowledge gained from abroad. While the “Bringing In” policy has facilitated knowledge acquisition at home by attracting foreign investment, the “Going Out” policy has supported Chinese multinational enterprises (MNEs) in searching for knowledge abroad (Zhong et al., 2015). The efforts to encourage knowledge acquisition reached a critical milestone in 2016, when China’s outward foreign direct investment (outward FDI) outnumbered its inward foreign direct investment (inward FDI) for the first time in recent history (Deng, 2012).

Accordingly, in the context of the rapid international expansion of Chinese firms, there is a need to better understand their knowledge management activities. Knowledge management primarily consists of knowledge acquisition, transfer, leverage, and creation (Shujahat et al., 2019). Existing insights into the knowledge management of MNEs, which have been derived primarily for those MNEs from advanced countries, may not be fully applicable to Chinese MNEs, owing to the latter’s unique characteristics. Chinese MNEs’ knowledge management activities are affected by state policies (e.g., Mei & Zhang, 2020; Zhou et al., 2017) and may rely on a different logic of matching ordinary resources from home with acquired knowledge resources from abroad (Li et al., 2021). Further, despite the fact that the past 15 years have witnessed a sharp increase in research on how Chinese organizations engage with foreign knowledge, which is either providing products and services to international customers or venturing abroad (e.g., Khavul et al., 2010; Piperopoulos et al., 2018), our understanding is still limited due to research fragmentation. Previous studies have either focused on, and have been nested in, different disciplines, such as strategic
management, international business, human resource management or marketing, or used context-specific approaches designed for journals specializing in emerging markets (e.g., Beamish & Lupton, 2016; Chang & Smale, 2014). Hence, it is time to critically assess the future directions in which this line of research needs to proceed.

The applicability of gaining a systematic understanding about Chinese MNEs’ knowledge management extend well beyond China. First, insights into the knowledge management among Chinese MNEs are critical for MNEs from other emerging countries that face similar home-country contexts with a high level of government involvement. With Chinese MNEs leading the way in managing knowledge on a global scale, the insights gained from their approach may help speed up the learning process of MNEs in other emerging countries. Second, such insights are also critical for the governments and MNEs in the advanced countries because Chinese MNEs’ knowledge management activities have become a global phenomenon affecting countries and MNEs across the world, including their rapidly growing global acquisitions (e.g., Ai & Tan, 2018; Liang et al., 2022) and global research and development (R&D) efforts (e.g., Wang et al., 2018; Xu et al., 2021). Third, with the increasing geopolitical reactions to China’s involvement in knowledge-intensive high-tech industries, a better understanding of Chinese MNEs’ knowledge management activities is of global significance. In particular, with rapid advancements in digital industries (e.g., artificial intelligence, big data, and social media), China may emerge as an impactful nation in reframing the role of government involvement in firm-level knowledge management activities.

This study contributes to research on the knowledge management activities of Chinese MNEs in two major areas. First, we take stock of the literature about knowledge management activities among Chinese MNEs with the aim to develop a novel overarching conceptual framework. To this end, we conduct a bibliometric analysis of 150 studies published in top
academic business and management journals. By synthesizing and integrating a wide range of theoretical ideas and empirical findings, we develop a conceptual framework that includes six topical clusters (1. catch-up strategy via knowledge exploitation and exploration; 2. outward FDI and knowledge seeking; 3. knowledge spillover through inward FDI; 4. cross-border mergers and acquisitions (M&A) and knowledge transfer; 5. innovation and knowledge creation; 6. cross-border human resource management and knowledge transfer) across three evolutionary phases (1. home orientation; 2. overseas orientation, and 3. global orientation).

Second, based on our assessment of the current state of the art, we identify multiple promising avenues for future research. By mapping out and integrating various insights, we reveal serious gaps in the literature. For instance, by observing that research has focused primarily on knowledge acquisition and transfer (e.g., He et al., 2018; Kong et al., 2018; Yakob, 2018), we highlight future research avenues regarding knowledge leverage (exploitation) and knowledge creation (exploration) (Du et al., 2017; He et al., 2018). Several of the other research avenues involve looking at how current developments in the global environment are likely to shape the knowledge management activities of Chinese MNEs, as they shift from foreign knowledge acquisition to global knowledge creation. Specifically, we propose that future research should explore the implications of global knowledge creation. We also call for more research on how knowledge management is likely to shift with digital transformation. In the next section, we describe the methodology of our study. In the subsequent sections, we present our findings out of a systematic review, develop a comprehensive framework of knowledge management in Chinese MNEs and, finally, present suggestions for future research.

2.2 Design of the Systematic Review Study
2.2.1 Search Strategy

We used a structured, transparent and reproducible methodology for our systematic literature review, and carefully selected and sorted potentially relevant academic contributions (Tranfield et al., 2003). We included only peer-reviewed English-language journals and articles focusing on Chinese MNEs, and we excluded books, book chapters, teaching cases, other non-refereed publications and other-language publications because peer-reviewed articles are validated knowledge that tend to have the highest impact on the field (Podsakoff et al., 2005). Therefore, relying on the two-step review process (Figure 2), which functions as our quality control mechanism, we examined existing knowledge in the international academic community (Judge et al., 2007).

Figure 2. Steps of article selection

2.2.2 Selection Criteria and Procedures

We first identified journals for inclusion using the Web of Science online bibliographic knowledge database, particularly (but not limited to) the ISI Web of Knowledge’s Social
Science Citation Index (SSCI) (Armstrong & Wilkinson, 2007). We searched on the Web of Science for articles with the following keywords in their title, abstract or keywords: ‘knowledge’, ‘Chin*’ and ‘MNE’, ‘MNC’ or ‘multinat*’. We then defined several refined criteria. First, we only search the business and management categories on the Web of Science. Second, we only included English as the writing language. Third, we only included ‘articles’, ‘reviews’ and ‘editorial materials’ (we specifically excluded ‘proceedings papers’). Fourth, the search period was restricted to 1996 (01 January) – 2022 (12 June). Our first-order bibliographic data resulted in 541 articles.

Next, we further refined this sample by focusing on studies published in (i) top academic journals, defined as ranked 3, 4 and 4* in the Academic Journal Guide 2021, published by the Chartered Association of Business Schools (see Table 5 for a list of journals), or (ii) journals specializing in Chinese or emerging markets, even though with lower rankings (e.g., International Journal of Emerging Markets and Chinese Management Studies). Overall, this reduced our sample of articles to 338.

Moreover, we checked whether the reduced first-order sample of 338 articles satisfied our criteria for final inclusion (Rashman et al., 2009). That is, (i) the contents of the article should be about knowledge and should preferably contain specific use of the word ‘knowledge’; and (ii) the article should be specifically about Chinese MNEs, including domestic Chinese firms directly dealing with foreign customers. After reading the titles and abstracts (Schauer et al., 2015), we further eliminated 188 articles that failed to meet these criteria. Several articles fell outside the scope of our review because they were about foreign multinationals’ subsidiaries in China (e.g., Furusawa & Brewster, 2019; Jansson & Söderman, 2019; Jiang & Yahiaoui, 2019). Our final sample included 150 articles as the second-order search result (Table 5).
### Table 5. Selected journal list

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<tr>
<td><strong>International Business (79 articles; 10 journals)</strong></td>
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<tr>
<td>International Business Review</td>
<td>3</td>
<td>18</td>
<td>2</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Journal of World Business</td>
<td>4</td>
<td>13</td>
<td>1</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>International Journal of Emerging Markets</td>
<td>1</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Journal of International Management</td>
<td>3</td>
<td>10</td>
<td>0</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Asia Pacific Journal of Management</td>
<td>3</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Asian Business and Management</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Journal of International Business Studies</td>
<td>4*</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Management International Review</td>
<td>3</td>
<td>4</td>
<td>0</td>
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<td>Management and Organization Review</td>
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<tr>
<td>Asia Pacific Business Review</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>General Management, Ethics and Social Responsibility (16 articles; 5 journals)</strong></td>
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<tr>
<td>Journal of Business Research</td>
<td>3</td>
<td>12</td>
<td>0</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>British Journal of Management</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Management Studies</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
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<tr>
<td>International Journal of Management Reviews</td>
<td>3</td>
<td>1</td>
<td>0</td>
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<tr>
<td>Journal of Business Ethics</td>
<td>3</td>
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<td>1</td>
<td>0</td>
<td>0</td>
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<tr>
<td><strong>Innovation (10 articles; 4 journals)</strong></td>
<td></td>
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<tr>
<td>Research Policy</td>
<td>4*</td>
<td>5</td>
<td>2</td>
<td>1</td>
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<tr>
<td>R&amp;D Management</td>
<td>3</td>
<td>2</td>
<td>0</td>
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<td>Technovation</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>The Journal of Technology Transfer</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sector Studies (10 articles; 2 journals)</strong></td>
<td></td>
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<tr>
<td>Chinese Management Studies</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>International Journal of Contemporary Hospitality Management</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Strategy (8 articles; 3 journals)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Strategy Journal</td>
<td>4</td>
<td>6</td>
<td>0</td>
<td>3</td>
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</tr>
<tr>
<td>Strategic Management Journal</td>
<td>4*</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Long Range Planning</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Social Sciences (8 articles; 3 journals)</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Industrial and Corporate Change</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Technological Forecasting and Social Change</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Business Strategy and The Environment</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Organization Studies (7 articles; 1 journals)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journal of Knowledge Management</td>
<td>2</td>
<td>7</td>
<td>0</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td><strong>Operations and Technology Management (4 articles; 2 journals)</strong></td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>International Journal of Operations and Production Management</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>IEEE Transactions on Engineering Management</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Human Resource Management (4 articles; 1 journal)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Journal of Human Resource Management</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Marketing (3 articles; 2 journals)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journal of International Marketing</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>International Marketing Review</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Entrepreneurship &amp; Small Business Management (1 articles; 1 journals)</strong></td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Journal of Business Venturing</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total: 34 journals &amp; 11 research fields</strong></td>
<td>150</td>
<td>17</td>
<td>42</td>
<td>91</td>
<td></td>
</tr>
</tbody>
</table>

*Note: the research fields are based on ABS category classification.*
2.3 Bibliometric Analysis

We conducted a bibliometric analysis using the ‘bibliometrix’ R-package, which is a set of bibliometric and scientometric tools for quantitative research (Aria & Cuccurullo, 2017). The 150 results were from 34 journals with 361 unique authors, with only 9 being single authors of 10 articles, which amounts to 2.49% of the total number of authors. Collaboration is the norm in this domain.

The time distribution of the articles demonstrates that the topic is still relatively new. Although the earliest articles were published in 2007 (3 publications), the research in this domain began gaining momentum in 2010 (7 publications). Further, in this domain, the annual scientific production growth rate was 17.88% during 2007–2021, showing peaks in 2016 (11 publications) and 2018 (17 publications). The last two complete years of our search period revealed the highest number of publications (16 publications in 2020 and 30 publications in 2021). This suggests that interest in this topic may continue to grow, as visualized in Figure 3.

Regarding academic outlets, we found that the top-two productive journals [belonging to the international business (IB) domain] together account for approximately 20.67% of the publications: *International Business Review* (18 articles from 2007 to 2021) and *Journal of World Business* (13 articles from 2011 to 2022).

Moreover, Table 5 shows that 52.67% of the sampled articles (i.e., 79 articles) were published in the IB domain. Further, we notice a trend towards an increasing number of publications in the IB domain, particularly in the aforementioned top-two IB journals (i.e., *JIBS* and *JWB*), which published 55.56% of the articles on the topic within the last five years. However, compared with 10.67% of the articles that appeared in general management journals (56.25% of which were published within the last five years), we hardly observe any articles published in top-tier general management journals, such as *AMJ* and *AMR*. In addition, 6.67%
of the articles were published in the innovation domain (60% of which were published within the last five years), making this the third most productive domain. Overall, we can conclude that the major focus of the research on Chinese MNEs’ knowledge management activities is in the IB domain; however, it is expanding beyond IB, specifically towards general management and innovation studies.

**Figure 3.** Growth of studies on knowledge management among Chinese MNEs

Furthermore, the sampled articles can be divided into three publication periods: 17 articles (11.33%) were published between 2007 and 2011, 42 articles (28%) between 2012 and 2017, and 91 articles (60.67%) after 2018. Special issues on knowledge management and the globalization of emerging market enterprises, particularly those focusing on Chinese firms, have fueled the growth of publications. In particular, leading journals in the IB domain became turning points along the path of publication growth by launching special issues (e.g.,...
the *Asia Pacific Journal of Management* in September 2008 and the *Journal of World Business* in April 2011). Thus, special issues published by IB core journals have drastically encouraged scholarship in Chinese and emerging market knowledge management activities (Mellahi & Sminia, 2009).

We see that 85 out of the 150 articles are classified as quantitative studies, as pictured in Figure 4. Specifically, 50 of these articles use survey data mainly for the purpose of firm-level analysis, whereas 35 articles take archival data primarily for industrial or country-level analyses. There are 58 articles that adopt a qualitative research method, and there are 7 articles that can be classified as literature reviews.

**Figure 4.** Distribution of study types
Moreover, Table 6 shows that the top-three productive countries are also the top-three most cited countries: China, the UK and the US. However, although China has produced the highest number of publications on this topic (China published 51 articles, the UK 30 articles, and the US 18 articles), it ranks fourth in terms of average number of citations (27.9 citations), behind the US (44.9 citations), the UK (43.7 citations), and Canada (36.4 citations). Lastly, China’s multiple country publications (MCP) ratio is 53%. This ratio indicates that China’s degree of inter-country collaboration is relatively high, because over half of the Chinese publications are produced in collaboration with authors from other countries. Overall, it is clear that China’s knowledge management is a global topic as it has been widely studied by scholars all over the world, including those from the advanced countries.

### Table 6. Top 10 countries’ publication outputs

<table>
<thead>
<tr>
<th>Country</th>
<th>Articles</th>
<th>Freq</th>
<th>Single Country Publication</th>
<th>Multiple Country Publication</th>
<th>MCP Ratio</th>
<th>Total Citation</th>
<th>Average Citation</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>51</td>
<td>0.34</td>
<td>24</td>
<td>27</td>
<td>0.53</td>
<td>1423</td>
<td>27.9</td>
</tr>
<tr>
<td>UK</td>
<td>30</td>
<td>0.20</td>
<td>14</td>
<td>16</td>
<td>0.53</td>
<td>1310</td>
<td>43.7</td>
</tr>
<tr>
<td>US</td>
<td>18</td>
<td>0.12</td>
<td>8</td>
<td>10</td>
<td>0.56</td>
<td>808</td>
<td>44.9</td>
</tr>
<tr>
<td>Australia</td>
<td>11</td>
<td>0.07</td>
<td>6</td>
<td>5</td>
<td>0.46</td>
<td>168</td>
<td>15.3</td>
</tr>
<tr>
<td>Canada</td>
<td>7</td>
<td>0.05</td>
<td>6</td>
<td>1</td>
<td>0.14</td>
<td>255</td>
<td>36.4</td>
</tr>
<tr>
<td>Sweden</td>
<td>6</td>
<td>0.04</td>
<td>4</td>
<td>2</td>
<td>0.33</td>
<td>60</td>
<td>10.0</td>
</tr>
<tr>
<td>Germany</td>
<td>5</td>
<td>0.03</td>
<td>5</td>
<td>0</td>
<td>0.00</td>
<td>72</td>
<td>14.4</td>
</tr>
<tr>
<td>Italy</td>
<td>4</td>
<td>0.03</td>
<td>1</td>
<td>3</td>
<td>0.75</td>
<td>82</td>
<td>20.5</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3</td>
<td>0.02</td>
<td>0</td>
<td>3</td>
<td>1.00</td>
<td>41</td>
<td>13.7</td>
</tr>
<tr>
<td>Denmark</td>
<td>2</td>
<td>0.01</td>
<td>1</td>
<td>1</td>
<td>0.50</td>
<td>49</td>
<td>24.5</td>
</tr>
</tbody>
</table>

Note: In measuring the corresponding authors’ affiliation country, this table shows the top 10 countries (out of 22 countries) that are most productive on the topic.

After analyzing the keywords of the 150 sampled articles, we identified the top-ten trending keywords, as visualized in Figure 5. We divided the appearance of the keywords according to the manifested timeframes: before 2012, between 2012 and 2018, and after 2018. Before 2012, only four keywords emerged (i.e., ‘knowledge transfer’, ‘emerging market’, ‘absorptive capacity’ and ‘innovation performance’). Specifically, ‘absorptive capacity’ and
‘innovation performance’ both reached their growth rate peak in 2009. Then, between 2012 and 2018, the rest of the six top keywords emerged, with most of them reaching their growth rate peak around 2016 (e.g., ‘knowledge transfer’, ‘foreign direct investment’ and ‘cross-border acquisitions’). Finally, starting in 2018, ‘absorptive capacity’, ‘knowledge transfer’ and ‘foreign direct investment’ drastically declined in terms of growth, whereas ‘innovation performance’, ‘internationalization’ and ‘Chinese multinationals’ showed considerable increases.

**Figure 5. Trend of the topics of top 10 authors via keywords**

To summarize, the 150 articles were published in peer-reviewed journals across 11 research fields over the period 2007–2022. This sample offers a glimpse into the evolution of research into knowledge management activities conducted by Chinese firms and China, which can be considered a frontrunner representative of emerging economies. The growing incidence of articles published in high-reputation journals suggests that the topic is considered
increasingly important by business and management scholars. We think that this trend is highly likely to persist, since China is one of the most influential economies that has stepped onto the center stage of the world in recent decades (Alon et al., 2009; Deng, 2012).

Moreover, we would argue that studies on the methods of and reasons for Chinese MNEs’ knowledge management offer a fruitful platform for the development of novel IB theories (Vukicevic et al., 2021). Expanding our understanding of internationalization requires the recognition that, for Chinese MNEs, this is a way to not only exploit existing competitive advantages (Dunning, 1993), but also to reinforce new competitive advantages via gaining access to and further developing cutting-edge technologies (Luo & Tung, 2007). Accordingly, further improving their knowledge management activities is key for Chinese MNEs, as well as for those from other emerging countries.

2.4 Toward an Integrative Framework

We developed a systematic framework to synthesize and integrate the literature under review regarding the knowledge management of Chinese MNEs. It includes a broad timeline showing three evolutionary phases: home orientation phase (2007-2011), overseas orientation phase (2012–2017) and global orientation phase (after 2018). We identified this set of three phases on the basis of (1) the publication distribution and the trend of keywords’ growth, (2) China’s shift from focusing on inward FDI to outward FDI (UNCTAD, 2015), (3) key outward FDI policies issued by the Chinese government,¹ and (4) the ‘trade war’ between China and the US (BBC, 2020). Figure 6 depicts our conceptual framework.

¹ Examples here are the local Chinese authorities’ discretion to decide about outward FDI for resource exploitation lower than $300 million, cancel examination of foreign exchange fund sources and list the supported industries in different countries (Zhang et al. 2022).
Figure 6. The conceptual framework of knowledge management among Chinese MNEs

**Chinese MNEs’ Knowledge Management Activities**

<table>
<thead>
<tr>
<th>Home Orientation: Linking Inward FDI with Knowledge Management (46 articles)</th>
<th>Overseas Orientation: Linking Outward FDI with Knowledge Management (111 articles)</th>
<th>Global Orientation: Linking Global Innovation Centres with Knowledge Management (34 articles)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge Acquisition at Home</strong></td>
<td><strong>Knowledge Acquisition from Overseas</strong></td>
<td><strong>Knowledge Integration &amp; Creation</strong></td>
</tr>
<tr>
<td>• Externalities and knowledge spillover from foreign MNEs</td>
<td>• Where to search for knowledge</td>
<td>• Focus on architectural competence</td>
</tr>
<tr>
<td>• Direct knowledge transfer from foreign client firms</td>
<td>• How to search for knowledge: 1. Cross-border M&amp;As. 2. Chinese MNEs’ role of governance: SOE VS POE. 3. Network ties in foreign countries</td>
<td>• Open new offshore R&amp;D centres and integrate overseas subsidiaries into the global Chinese R&amp;D network</td>
</tr>
<tr>
<td><strong>Knowledge Leverage at Home</strong></td>
<td><strong>Reverse Knowledge Transfer from Overseas</strong></td>
<td>• Multiple Innovation strategies</td>
</tr>
<tr>
<td>• Assorptive capacity</td>
<td>• Analysis on organisational level: absorptive capacity &amp; knowledge transfer motivation</td>
<td><strong>Government Impact in the Global Orientation Phase</strong></td>
</tr>
<tr>
<td>• Global network ties</td>
<td>• Analysis on relational level: knowledge sender (overseas subsidiaries) and the receiver (Chinese HQs)</td>
<td>• The unfavorable global political environment</td>
</tr>
<tr>
<td><strong>Government Impact in the Home Orientation Phase</strong></td>
<td>• Analysis on individual level: expatriates &amp; returnees</td>
<td>• Innovation-encouraging policies initiated by Chinese government</td>
</tr>
<tr>
<td>• Chinese government guidance of industrial development</td>
<td>• Analysis on institutional level: institutional difference</td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge Leverage Overseas</strong></td>
<td><strong>Government Impact in the Overseas Orientation Phase</strong></td>
<td></td>
</tr>
<tr>
<td>• Network ties in foreign countries</td>
<td>• Facilitate building and maintaining political ties with foreign institutions and MNEs</td>
<td></td>
</tr>
<tr>
<td>• Institutional advantages</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Future Research Directions</strong></td>
<td><strong>Outcomes of Knowledge Management among Chinese MNEs</strong></td>
<td></td>
</tr>
<tr>
<td>• Shifting From Knowledge Acquisition and Transfer to Knowledge Creation</td>
<td>• Innovation and learning</td>
<td>• Competitiveness and internationalisation</td>
</tr>
<tr>
<td>• Knowledge Management in the Context of Digital Transformation</td>
<td>• Chinese MNEs Competing with Advanced-Country MNEs in Emerging Markets</td>
<td></td>
</tr>
<tr>
<td>• Engaging with Local and Foreign Governmental Agents</td>
<td>• Chinese Socio-Cultural Effect on Knowledge Management</td>
<td></td>
</tr>
</tbody>
</table>
Compared with the advanced-country MNEs, which focus on internationalization aimed at exploiting the existing competitive advantages of advanced market multinational enterprises (Dunning, 1993), Chinese MNEs seek to successfully navigate international markets by integrating compositional and springboarding logic to harness the capabilities of amalgamation, ambidexterity and adaptation (Li et al., 2021). However, Chinese MNEs are under considerable governmental impact at each internationalization stage to engage in knowledge absorption and technological catching up, in addition to the pursuit of profitability. This is especially the case for headquarters (HQ) with strong political ties that are obligated to achieve political goals and mandates (e.g., contributing to social employment or lifting national competitiveness) (Su et al., 2020).

Political ties are a key factor in knowledge acquisition and transfer activities within Chinese MNEs, and they directly influence their decision-making processes (Zhou et al., 2017). In the Chinese context, such strong political ties come with important benefits, such as resource allocation and managerial knowledge within the domestic market, but may also generate a sort of ‘liability of politicalness’ for Chinese MNEs operating in overseas markets, particularly in the advanced countries (Su et al., 2020). However, the duality of HQ and overseas subsidiaries regarding governmental impact may lead to high ‘organizational distance’, which is argued to be the core barrier to knowledge transfer because of low commonality in institutional heritage and organizational cultures (Ambos et al., 2006; Simonin, 1999).

We integrated research insights regarding the Chinese “Bringing In” and “Going Out” policies since they create different types of opportunities for Chinese MNEs to engage with foreign knowledge. During the initial “Bringing In” phase, Chinese firms mainly acquired knowledge through inward FDI in their home market. Inward FDI opened a window of
opportunity to acquire knowledge from foreign customers operating within China through cooperation and by implementing the higher production standards required by foreign customers. This phase is characterized by a focus on acquiring codifiable technical knowledge and developing managerial skills through interactions with foreign customers. The resulting increase in absorptive capacity and growing managerial knowledge formed the basis for Chinese firms to enter into the second phase of knowledge management. Absorptive capacity refers to the ability to “recognize the value of new, external information, assimilate it, and apply it to commercial ends” (Cohen & Levinthal, 1990, p. 207).

During the second phase, supported by the government’s “Going Out” policy, Chinese firms increasingly started to search for knowledge abroad. The growth in outgoing FDI meant that Chinese MNEs initiated foreign knowledge-seeking strategies by investing in overseas markets in the advanced countries and conducting cross-border M&A to acquire technologically advanced foreign firms. In this phase, there was an emphasis on intra-firm and reverse knowledge transfer, as Chinese MNEs sought to bring knowledge from their newly acquired foreign subsidiaries back home. The first and second phases depict an evolutionary shift from focusing on foreign knowledge acquisition inside China to doing so outside China.

Stimulated by policies such as “Going Global”, “Made in China 2025” and “The Belt and Road Initiative” (Zenglein & Holzmann, 2019), China attracted the second highest amount of FDI in the world (UNCTAD, 2022). Subsequently, this came with the recent increasing efforts of Chinese MNEs to strengthen their competitiveness on the global stage, firmly based on knowledge creation and integration (Vukicevic et al., 2021). This can be seen as the third phase for Chinese MNEs. It is worth noting that each of the above three phases is associated with “matched” knowledge management activities. To characterize these shifts, we turn to extant studies on knowledge management. Below, we present example articles on Chinese
MNEs’ knowledge management activities typical for each phase (Figure 7). Specifically, we incorporated insights from the business and management literature to combine commonly used knowledge terms (i.e., tacit and explicit knowledge) with other common dimensions (i.e., functional and strategic knowledge) in describing knowledge characteristics (Jiang & Murmann, 2022; Li et al., 2016; Zhong et al., 2013) (Table 7). Further, research on knowledge in Chinese MNEs can be classified based on the type of knowledge involved: technological vis-à-vis managerial (Duanmu & Fai, 2007). Technological knowledge is underpinned by product design and manufacturing, whereas managerial knowledge involves skills in managing and organizing production and transaction activities (Brusoni et al., 2001). However, these two types of knowledge are interrelated. On the one hand, firms’ search for technological knowledge depends on their managerial capabilities. On the other hand, opportunities to develop managerial capabilities are bounded by firms’ technological knowledge.

In our review, these aspects were clearly observed in studies showing that managerial capabilities influenced where firms searched for knowledge (Li et al., 2012; Liu et al., 2016). Conversely, in other studies, this was corroborated by revealing that firms’ current technology affected their ability to develop managerial skills through the impact on their foreign expansion choices (Wu et al., 2016). In developing our comprehensive framework, we treated the two categories of knowledge as intertwined and described the relationships between them during the first two phases outlined above. Below, we integrate insights from both the initial phases, and put forward multiple suggestions as to how research in the field might be developed further to capture Chinese MNEs’ increased focus on global orientation in the emerging third phase.
Figure 7. Example research papers of Chinese MNEs’ knowledge management activities per phases

<table>
<thead>
<tr>
<th>Chinese MNEs’ Knowledge Management Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Home Orientation: Linking Inward FDI with Knowledge Management (46 articles)</strong></td>
</tr>
<tr>
<td>- Knowledge Acquisition at Home</td>
</tr>
<tr>
<td>1. Externalities and knowledge spillover from foreign MNEs (Li et al., 2010; Xie and Li, 2013; Li et al., 2019; Liu et al., 2019)</td>
</tr>
<tr>
<td>2. Direct knowledge transfer from foreign client firms (Li et al., 2016; Liu et al., 2019; Wang et al., 2018)</td>
</tr>
<tr>
<td><strong>Knowledge Leverage at Home</strong></td>
</tr>
<tr>
<td>1. Absorptive capacity (Duanmu and Fai, 2007; Li et al., 2009)</td>
</tr>
<tr>
<td>2. Global network ties (Duanmu and Fai, 2007; Li et al., 2012; Wang et al., 2018)</td>
</tr>
<tr>
<td><strong>Government Impact in the Home Orientation Phase</strong></td>
</tr>
<tr>
<td>1. Chinese government guidance of industrial development (Ciabocchi et al., 2017; Li et al., 2021; Mei and Zhang, 2020; Xie et al., 2022; Ma et al., 2022)</td>
</tr>
<tr>
<td><strong>Overseas Orientation: Linking Outward FDI with Knowledge Management (111 articles)</strong></td>
</tr>
<tr>
<td>- Knowledge Acquisition from Overseas</td>
</tr>
<tr>
<td>1. Where to search for knowledge (Zhang et al., 2013; Wu et al., 2016; Yang et al., 2018; Pippelopoulos et al., 2018)</td>
</tr>
<tr>
<td>2. How to search for knowledge: (Li et al., 2012; Lebedev et al., 2015; Beamish and Lupton, 2016)</td>
</tr>
<tr>
<td>- Reverse Knowledge Transfer from Overseas</td>
</tr>
<tr>
<td>1. Analysis on organisational level: absorptive capacity &amp; knowledge transfer motivation (Ciabocchi et al., 2017; Kong et al., 2018; Ai and Tan, 2018)</td>
</tr>
<tr>
<td>2. Analysis on relational level: knowledge sender (overseas subsidiaries) and the receiver (Chinese HQs) (Duanmu and Fai, 2007; McKenna et al., 2010; Schuler-Zhou and Schuller, 2013)</td>
</tr>
<tr>
<td>3. Analysis on individual level: expatriates &amp; returns (Buckley et al., 2009; Ai and Tan, 2018)</td>
</tr>
<tr>
<td>- Analysis on institutional level: institutional difference (Chang and Smale, 2014; Ciabocchi et al., 2017)</td>
</tr>
<tr>
<td><strong>Knowledge Leverage Overseas</strong></td>
</tr>
<tr>
<td>1. Network ties in foreign countries (Cook et al., 2015; Kotabe and Kothari, 2016)</td>
</tr>
<tr>
<td>2. Institutional advantages (Argote and Maznevski, 2011; Chi and Zhou, 2014)</td>
</tr>
<tr>
<td><strong>Government Impact in the Overseas Orientation Phase</strong></td>
</tr>
<tr>
<td>1. Facilitate building and maintaining political ties with foreign institutions and MNEs (Li et al., 2016; Su et al., 2020; Mei and Zhang, 2020; Li et al., 2021)</td>
</tr>
<tr>
<td><strong>Global Orientation: Linking Global Innovation Centres with Knowledge Management (34 articles)</strong></td>
</tr>
<tr>
<td>- Knowledge Integration &amp; Creation</td>
</tr>
<tr>
<td>1. Focus on architectural competence (Chi and Zhao, 2014; Rui et al., 2016)</td>
</tr>
<tr>
<td>2. Open new offshore R&amp;D centres and integrate overseas subsidiaries into the global Chinese R&amp;D network (Vukicevic et al., 2021; Kotabe et al., 2011)</td>
</tr>
<tr>
<td>3. Multiple Innovation strategies (Hertenstein and Williamson, 2018; Wang et al., 2018)</td>
</tr>
<tr>
<td>- Government Impact is the Global Orientation Phase</td>
</tr>
<tr>
<td>1. The unfavourable global political environment (Vukicevic et al., 2021)</td>
</tr>
<tr>
<td>2. Innovation-encouraging policies initiated by Chinese government (Kotabe et al., 2011; Choi et al., 2019; Mei and Zhang, 2020; Zhu et al., 2020)</td>
</tr>
</tbody>
</table>

**Outcomes of Knowledge Management for Chinese MNEs**

- Innovation and learning (Wang and Kauffman, 2009; Li et al., 2016; Wu et al., 2016; Pippelopoulos et al., 2018; Wu and Park, 2019; Wang and Li, 2017; He et al., 2018)
- Competitiveness and internationalisation (Wang et al., 2012; Chong et al., 2013; Yu et al., 2017; Liu et al., 2016)
<table>
<thead>
<tr>
<th>Knowledge Management Phase</th>
<th>Author &amp; Year</th>
<th>Journal</th>
<th>Method Choice</th>
<th>Main Knowledge</th>
<th>Knowledge Characteristic</th>
<th>Main argument or contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Orientation:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inward FDI Phase</td>
<td>Tzeng et al. (2011)</td>
<td>Asia Pacific Journal of Management</td>
<td>Interview; Archival data</td>
<td>Technological knowledge</td>
<td>Explicit; Functional</td>
<td>At the start-up stage, the Chinese government facilitates technology transfer to indigenous Chinese firms and protects them from lawsuits filed by multinational corporations.</td>
</tr>
<tr>
<td>Duanmu &amp; Fai (2007)</td>
<td>International Business Review</td>
<td>Interview; Archival data</td>
<td>Product quality maintenance and cost control knowledge</td>
<td>Explicit; Functional</td>
<td>The types of knowledge transferred from MNEs to Chinese firms as suppliers evolve as they deepen relationships and the cooperative activities within it.</td>
<td></td>
</tr>
<tr>
<td>Li et al. (2012)</td>
<td>Global Strategy Journal</td>
<td>Database</td>
<td>Managerial knowledge; technological knowledge</td>
<td>Functional</td>
<td>Global network ties help Chinese firms to acquire knowledge from inward FDI and facilitate knowledge utilization in the domestic market.</td>
<td></td>
</tr>
<tr>
<td>Xie &amp; Li (2013)</td>
<td>Journal of International Management</td>
<td>Database</td>
<td>Technological knowledge</td>
<td>Functional</td>
<td>Chinese MNEs can acquire technological knowledge domestically through spillover from foreign competitors</td>
<td></td>
</tr>
<tr>
<td>Hertenstein &amp; Williamson (2018)</td>
<td>Technovation</td>
<td>Interview; Archival data</td>
<td>R&amp;D knowledge; managerial knowledge</td>
<td>Functional</td>
<td>The Chinese firms, base development on assembling technologies drawn from around the world to create products that are improved through rapid design iterations drawing on market feedback. It is enabled by a different relationship with suppliers that involves providing innovation embodied in modular components and sub-assemblies to Chinese vehicle makers.</td>
<td></td>
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<tr>
<td>Overseas Orientation:</td>
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<tr>
<td>Outward FDI Phase</td>
<td>Schüller-Zhou &amp; Schüller (2013)</td>
<td>Asian Business &amp; Management</td>
<td>Survey</td>
<td>Managerial knowledge</td>
<td>Tacit</td>
<td>The unwillingness of overseas subsidiaries to engage in reverse knowledge transfer has stemmed from a lack of trust between them and the Chinese parent firm.</td>
</tr>
<tr>
<td>Fan et al. (2016)</td>
<td>International Business Review</td>
<td>Interview; Archival data</td>
<td>Marketing &amp; sales knowledge</td>
<td>Explicit; Functional</td>
<td>Equifinal process-position-path configurations of firms that will motivate Chinese MNEs to engage in localized learning (as opposed to generalized learning).</td>
<td></td>
</tr>
<tr>
<td>Li et al. (2016)</td>
<td>International Business Review</td>
<td>Database</td>
<td>Technological knowledge</td>
<td>Functional</td>
<td>Regional absorptive capacity has a positive impact on domestic innovation performance; Outward FDI for strategic asset acquisition has a strong positive influence on innovation performance at home.</td>
<td></td>
</tr>
<tr>
<td>Authors</td>
<td>Journal/Database</td>
<td>Method</td>
<td>Knowledge Area</td>
<td>Strategy</td>
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<tr>
<td>Piperopoulos et al. (2018)</td>
<td>Research Policy Database</td>
<td>Decision-making knowledge about outward FDI location choice</td>
<td>Strategic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yang (2018)</td>
<td>Journal of International Management Database</td>
<td>Adaptation knowledge about unfavorable institution; Decision-making knowledge about outward FDI location choice</td>
<td>Strategic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kotabe et al. (2011); Kotabe et al. (2016)</td>
<td>Journal of World Business Survey</td>
<td>Decision-making knowledge about R&amp;D center location choice</td>
<td>Strategic</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Hertenstein &amp; Williamson (2018)</td>
<td>Technovation Interview; Archival data</td>
<td>Decision-making knowledge about selection of innovation strategy</td>
<td>Strategic</td>
<td></td>
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</tbody>
</table>

**Global Orientation:**

**Global Innovation Phase:**

- Advanced countries as “learning laboratories” can provide great learning opportunities allowing Chinese MNEs to acquire scarce knowledge through their local subsidiaries.
- Chinese MNEs initially selecting regional markets as the first step towards eventual global diversification; Chinese MNEs are able to adapt easily to unfavorable environments.
- Superior managerial knowledge helping with transferring technological knowledge from overseas subsidiaries.
- Chinese MNEs shift from knowledge acquisition globally to global knowledge creation by open new offshore R&D centers.
- Chinese MNEs’ selection of innovation strategy (e.g., incremental and radical innovation) is affected by the relationship between suppliers from the advanced country.
In addition, we utilized bibliographic coupling to assess the extent to which our sample articles co-cited the same secondary documents (Batistič & van der Laken, 2019; Wu et al., 2021), which informs the similarity in terms of citation proximity among our sample articles. The sample articles with a higher coupling weight (i.e., larger points in the graph) have a larger number of the same secondary documents cited in the reference lists and inform the major research priorities in the knowledge management of Chinese MNEs (Wu et al., 2021; Zupic & Čater, 2015). We applied 15 citation minimum count thresholds, which yielded 74 articles nested in six clusters (see Figure 8). Subsequently, we allocated the six clusters to the three knowledge management phases according to our knowledge management framework. These phases are presented in Table 8.

The six clusters with different central topics correspond to Chinese MNEs’ knowledge management in three phases. Cluster 1 is the largest, with 18 articles on the catch-up strategy of Chinese MNEs that involves focusing on knowledge exploitation and exploration. Cluster 2 (16 articles) relates to outward FDI-facilitated Chinese MNEs’ knowledge-seeking behavior. Cluster 3 is about inward FDI-based knowledge spillover (14 articles). The 10 articles in Cluster 4 have the highest number of average citations (96 citations), focusing on cross-border M&A and knowledge transfer among Chinese MNEs. Cluster 5 (8 articles) is about innovation and knowledge creation. Cluster 6 (8 articles) concerns cross-border human resource management and knowledge transfer in Chinese MNEs.
Figure 8. Bibliographic coupling analysis of knowledge management among Chinese MNEs

Notes: The map presents the 74 primary documents based on the bibliographic coupling analysis using a fractional counting method with a minimum of 15 citation count threshold. The size of the points is determined by the weighted number of total citations of which articles. The articles from the same cluster are more similar to each other in citing documents in their reference list.
Table 8. The most impactful articles from each cluster based on bibliographic coupling analysis

<table>
<thead>
<tr>
<th>Phase</th>
<th>Cluster</th>
<th>Topic</th>
<th>Citation</th>
<th>Publication Year</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home orientation</td>
<td>3</td>
<td>Knowledge spillover through inward FDI</td>
<td>287</td>
<td>2007</td>
<td>Innovation performance and channels for international technology spillovers: Evidence from Chinese high-tech industries</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>104</td>
<td>2012</td>
<td>Knowledge seeking and outward FDI of emerging market firms: The moderating effect of inward FDI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>99</td>
<td>2016</td>
<td>Outward foreign direct investment and domestic innovation performance: Evidence from China</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>86</td>
<td>2009</td>
<td>What factors determine innovation performance in emerging economies? Evidence from China</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>59</td>
<td>2016</td>
<td>Geographical FDI knowledge spillover and innovation of indigenous firms in China</td>
</tr>
<tr>
<td>Overseas orientation</td>
<td>6</td>
<td>Cross-border human resource management and knowledge transfer</td>
<td>35</td>
<td>2018</td>
<td>Reverse knowledge acquisition in emerging market MNEs: The experiences of Huawei and ZTE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>26</td>
<td>2017</td>
<td>Exploring cross-cultural skills for expatriate managers from Chinese multinationals: Congruence and contextualization</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>25</td>
<td>2017</td>
<td>Chinese expatriate management in emerging markets: A competitive advantage perspective</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>24</td>
<td>2018</td>
<td>Person-environment fit and emotional control: Assigned expatriates vs. self-initiated expatriates</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24</td>
<td>2016</td>
<td>Relevant knowledge and recipient ownership: Chinese MNC’s knowledge transfer in Africa</td>
</tr>
<tr>
<td>Overseas orientation</td>
<td>2</td>
<td>Outward FDI and knowledge seeking</td>
<td>151</td>
<td>2012</td>
<td>The internationalization of Chinese firms: A critical review and future research</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>129</td>
<td>2012</td>
<td>Firm heterogeneity and location choice of Chinese multinational enterprises (MNEs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>120</td>
<td>2010</td>
<td>Factors determining offshore location choice for R&amp;D projects: A comparative study of developed and emerging regions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>53</td>
<td>2012</td>
<td>Task attributes and process integration in business process offshoring: A perspective of service providers from India and China</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>37</td>
<td>2016</td>
<td>Localized learning by emerging multinational enterprises in developed host countries: A fuzzy-set analysis of Chinese foreign direct investment in Australia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>2019</td>
<td>The moderated mediating effect of international diversification, technological capability, and market orientation on emerging market firms' new product performance</td>
</tr>
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<td>------------------------------------------</td>
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</tr>
<tr>
<td>Overseas orientation</td>
<td>Catch-up strategy via knowledge exploitation and exploration</td>
<td>Emerging market multinational companies' evolutionary paths to building a competitive advantage from emerging markets to developed Knowledge management and innovation strategy: The challenge for latecomers in emerging economies Supply chain learning of sustainability in multi-tier supply chains: A resource orchestration perspective The strategies of Chinese and Indian software multinationals: Implications for internationalization theory Boundary spanners, HRM practices, and reverse knowledge transfer: The case of Chinese cross-border acquisitions</td>
<td>2016 93</td>
<td>2008 89</td>
<td>2018 86</td>
</tr>
<tr>
<td>Global orientation</td>
<td>Innovation and knowledge creation</td>
<td>Internationalization and innovation performance of emerging market enterprises: The role of host-country institutional development Outward FDI, location choices and innovation performance of emerging market enterprises Ownership strategies in knowledge-intensive cross-border acquisitions: Comparing Chinese and Indian MNEs Global R&amp;D alliances in China: Collaborations with universities and research institutes The role of internationalization in enhancing the innovation performance of Chinese MNEs: A geographic relational approach</td>
<td>2016 124</td>
<td>2018 112</td>
<td>2020 49</td>
</tr>
</tbody>
</table>
2.5 Home Orientation: Linking Inward FDI with Knowledge Management

At the onset of the “Bringing In” policy, Chinese firms were lagging behind foreign firms in terms of both technical and managerial knowledge (Duanmu & Fai, 2007). Having less sophisticated capabilities for managing foreign operations, Chinese firms were focused on obtaining foreign knowledge at home. The ‘Bringing In’ policy stimulated knowledge acquisition by encouraging Chinese firms to import foreign knowledge and facilitating engagement with foreign firms in China. Studies show that Chinese enterprises had low absorptive capacity, implying that having the opportunity to operate in a familiar environment while acquiring foreign knowledge was crucial to enhancing their ability to learn (Xie & Li, 2013).

2.5.1 Knowledge Acquisition at Home

Inward FDI gave Chinese firms an opportunity to acquire knowledge from overseas while still operating largely at home. During this phase, because of their low absorptive capacity, these firms focused on acquiring functional and explicit knowledge (Duanmu & Fai, 2007). The knowledge acquisition process took place primarily through two main mechanisms: (i) externalities and knowledge spillover from foreign MNEs; and (ii) direct transfer of knowledge from foreign client firms.

The first mechanism – knowledge spillover – dominates the research on knowledge acquisition through inward FDI (e.g., Li et al., 2012; Wang & Wu, 2016; Wang & Zhou, 2013). By cooperating and interacting with foreign firms in their home markets (e.g., by becoming a supplier and circulating skilled labor) (Hertenstein & Williamson, 2018; Piperopoulos et al., 2018), Chinese firms observed, imitated and reverse-engineered the products and services of foreign MNEs; they thus accumulated knowledge and developed capabilities by closely observing how foreign firms operated. Xie and Li (2013) suggest to
look at this from the perspective of competition, and arguing that because Chinese MNEs can acquire technological knowledge domestically through spillover from foreign competitors, this gives them exposure to intense global competition. The pressure to compete increased the demand for advanced global technologies, rather than for those that were traditionally only available domestically, and encouraged Chinese MNEs to augment their absorptive capacity. To be able to compete more effectively in the global market, Chinese MNEs (especially those from the regions with better technological resource bases) increased their investment in R&D, being supported by government policy targeting technological upgrading (Liu et al., 2019).

Although foreign MNEs can achieve cost efficiencies by offshoring production or even R&D activities to China (Li, 2010), they tend to take measures to prevent knowledge leakage to firms in the host country, especially to potential local competitors in the host countries. Therefore, simply having links to foreign firms (e.g., through export trade activities and inward FDI) is by no means enough to facilitate the technological innovativeness of Chinese firms and reduce their reliance on inflows of foreign technology, unless also accompanied by supportive institutional development. Taking the perspective of the MNEs from the advanced countries, Veugelers and Houte (1990) show that these MNEs can indeed stimulate Chinese firms to become more innovative through the knowledge spillover effect of FDI. However, they note also that this can hamper the further development of R&D activities due to the reduced research budgets and lower profits caused by the intense competition of MNEs, which limits the scale of production of the Chinese firms.

The second mechanism by which Chinese firms can acquire foreign knowledge at home is through direct knowledge transfer from foreign client firms. Although micro-level knowledge transfer between Western MNEs and their Chinese suppliers has been less studied than spillover effects (Duanmu & Fai, 2007), several important insights have emerged.

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Importantly, knowledge transfer takes place intentionally as foreign MNEs transfer selected knowledge to Chinese suppliers when they perceive there to be benefits from doing so, such as improved quality or lower cost (Crone & Roper, 2001; Duanmu & Fai, 2007). Such knowledge transfers are often hindered by the HQ of the foreign MNEs because of concerns regarding the protection of intellectual property rights in China. As Kaufmann and Roessing (2005) argue, knowledge transfer can create tensions within foreign MNEs, with those at HQ trying to protect knowledge and the foreign subsidiary seeking to share knowledge to gain more benefits from operating in China. The ownership structure can affect the productivity of international joint ventures (IJVs) between Chinese firms and foreign partners, potentially enhancing the commitment of the foreign partners to transfer knowledge. Dominant foreign ownership may reduce the knowledge contribution and innovation capability of Chinese firms, while an ownership structure in which Chinese firms are dominant may lead to ineffectively acquiring knowledge from the foreign partner. Therefore, ideally, IJVs should be seen as a two-way process of knowledge transfer, absorption, and combination (Li et al., 2009).

2.5.2 Knowledge Leverage at Home

The theories used most frequently to examine and discuss how Chinese firms leverage knowledge at home are the knowledge-based view (Ai & Tan, 2018; Lu et al., 2014; Wu et al., 2015) and the resource-based view (Lynch & Jin, 2016; Wang et al., 2018), with absorptive capacity (e.g., Liu et al., 2019; Wang et al., 2018) and global network ties being two crucial factors that are argued to critically influence Chinese firms utilising knowledge at home. Specifically, knowledge leverage refers to “firms extracting value from their competencies, which encompasses the transfer of knowledge to different organizational units, new products, or geographic markets, and the exploitation, integration, and recombination of extant competencies” (McEvily et al., 2004, p.714).
In this first phase of “in-bound” engagement with foreign knowledge, Chinese MNEs are still rather inefficient at acquiring technological knowledge, and they focus primarily on explicit knowledge. It was evident from the studies in our review that, during this phase, Chinese MNEs could only slowly increase their absorptive capacity because of the higher transaction cost resulting from the poor institutional environment at home, significant differences in technology advancement, and the differences in cultural background, organizational structures and management styles. However, Chinese MNEs started to leverage their global network ties with foreign MNEs to enhance their absorptive capacity so that they could preserve and apply valuable knowledge acquired from elsewhere. The strong global network ties served as a supplement to inadequate formal institutional infrastructures, moderating the high transaction cost, and promoting reciprocal cooperation and communication. Overall, interacting with foreign firms operating in China helped Chinese firms to develop managerial capabilities, which would later enable them to enter into foreign markets (Liu et al., 2016) and to increase their absorptive capacity, which would aid more advanced knowledge search abroad.

Also, global network ties help Chinese firms not only to acquire knowledge from foreign MNEs, but also to utilize this knowledge in the Chinese market (Li et al., 2012; Wang et al., 2018). Having strong global network ties gives Chinese enterprises better access to technical assistance from foreign MNEs, and allows them to integrate and make use of the knowledge resources they have acquired through the inward FDI process. Chinese firms can better understand the limits of their own capabilities by communicating frankly and transparently with foreign MNEs. Hence, global network ties help Chinese firms to use the knowledge acquired to examine their capability status to subsequently decide what types of knowledge they need to acquire further (Liu et al., 2016; Liu et al., 2019; Wang et al., 2018).
2.5.3 Government Impact in the Home Orientation Phase

Government policy plays a pivotal role in guiding industrial development; however, its impact and effectiveness are determined by the importance of industrial development in augmenting national competitiveness. During the inward internationalization period, regardless of the state-owned (SOEs) or private-owned (POEs) status of Chinese enterprises, only ordinary resources were available in the domestic market (which may still be scarce). This led Chinese firms to combine these ordinary resources with other resources through imports to produce ‘good enough’ products to satisfy domestic needs (Li et al., 2021). At this stage, Chinese MNEs effectively identified, obtained and combined ordinary resources available in the domestic market to create impressive price–value ratios (Li et al., 2021; Luo & Child, 2015).

However, there is a significant difference between Chinese SOEs and POEs. On the one hand, Chinese POEs often have difficulties in obtaining scarce information and resources, which they need to compensate for the high compositional capability to grow and compete of better-endowed SOE rivals (Li et al., 2021). On the other hand, Chinese POEs have better risk control skills, efficiency in resource utilization and a higher willingness to improve innovativeness in building and maintaining firm-specific advantages (Xie et al., 2022). Combined, Chinese POEs can be successful through exploitative learning within the domestic market; however, they may encounter serious challenges in the long-term owing to a lack of exploratory learning (Li et al., 2021). Compared with POEs, Chinese SOEs attracting and cooperating with foreign investments were enabled and motivated by both domestic resources and pressures from political relations (e.g., industrial support policy and financial aid). Therefore, politically connected HQ often pursue business and political interests simultaneously, which often leads to a high level of organizational bureaucracy/hierarchy in combination with a low level of entrepreneurship (Ciabuschi et al., 2017).
For example, in 1997, the Chinese government played a command-and-cultivate role for the national Chinese railway industry, which targeted high-speed passenger transport and heavy-load technology, defining this as the authoritative development goal of the railway industry (Mei & Zhang, 2020). The government prioritized the importance of Sino-foreign cooperation programmes to construct domestic knowledge networks and published mission-oriented policies. A small number of railway firms/organizations obtained highly centralized resources aimed at promoting innovation. Specifically, fundamental technologies with prototype trains were imported from high-tech foreign firms. For instance, in 2005, after rounds of negotiation guided by the Chinese central government, China South Railway Group Corporation (CSR) through joint ventures with Kawasaki Heavy Industries, imported and acquired the prototype train ‘E2-1000’ and associated train component technologies, mainly involving traction, motor, traction, transformer, and insulated gate bipolar transistor traction converters (Mei & Zhang, 2020).

Compared with key national industries such as the Chinese railway industry, there is a different situation when it comes to marginal industries such as the e-bike industry. For such industries, which were assigned lower importance, there was only an irrational national standard (i.e., GB17761-1999) that provided ambiguous instructions, without any government department being responsible for regulation implementation. In such cases, leading Chinese enterprises (e.g., the e-bike firm Yadea, a former fuel motorcycle producer) could only import technologies from overseas suppliers (e.g., production lines from Panasonic) and combine them with resources available at the time (e.g., with its low-tech fuel motorcycle production knowledge) (Ma et al., 2022).

Clearly, the Chinese government’s policy is the most dominant and far-reaching intervention that the State can actively use to influence firm behavior (Luo et al., 2010).
Broadly, at this inward FDI stage, this does not involve generic policy setting, but rather policies tailored to specific types of activities and industries defined as strategically important by the State, which can be associated with widely varying aims for one industry vis-à-vis another (Lu et al., 2011). For example, depending on the industry type, firm efficiency and ownership structure, such State-level policy intervention could also be meant to simply offset the competitive disadvantages of Chinese domestic firms and MNEs (Luo et al., 2010; Wang et al., 2020). All of this changed in the next stage of outward FDI.

2.6 Overseas Orientation: Linking Outward FDI with Knowledge Management

In the second phase, building on the knowledge acquired during the first phase, Chinese MNEs actively sought advanced strategic knowledge in overseas markets. In this context, we synthesize insights from previous research around main topics: knowledge acquisition, reverse knowledge transfer and knowledge leverage in overseas markets.

2.6.1 Knowledge Acquisition from Overseas

Research focusing on knowledge acquisition in foreign markets tends to draw primarily on the knowledge-based and the resource-based view of the firm since knowledge development and learning are indispensable parts of the internationalization of a firm (Gross et al., 2017). Two central research questions in this stream of work are (1) where firms should search for foreign knowledge and (2) how they should acquire this knowledge. Importantly, the strategy of knowledge sourcing from abroad is not limited to the high-tech sector (e.g., Fu et al., 2018; Guo et al., 2019) as firms from a variety of industries such as manufacturing (Ai & Tan, 2018), finance (Jack et al., 2019) or automotive (Yakob, 2018) engage in outward FDI for knowledge-seeking motives. Also, notably, Chinese MNEs are interested not only in accessing technical knowledge, but also to develop managerial know-how (e.g., McKenna et al., 2010).
Regarding the question of where to search for knowledge, studies largely consider whether Chinese MNEs should diversify regionally or go global. Regional diversification involves expanding from the home market into a foreign market that is geographically similar, whereas global diversification entails entering into multiple markets simultaneously. Searching for knowledge regionally has the advantage that operating in markets that are more like the home market makes it easier for Chinese firms to navigate the foreign institutional environment. Wu et al. (2016) argue that although the success of MNEs from emerging economies in the regional market could have a positive effect on their globalization, they still must operate under the tension associated with regional vis-à-vis global diversification.

Another approach to international knowledge search – searching in more distant, often more advanced, countries – is much more challenging due to substantial institutional distance and low organizational absorptive capacity (Zhong et al., 2013). Chinese firms tend to invest in the advanced countries because of the high level of advanced knowledge they offer (Zhong et al., 2013). Piperopoulos et al. (2018) explain that the advanced countries can provide great learning opportunities; they serve as “learning laboratories” allowing Chinese MNEs to acquire scarce knowledge through their subsidiaries in the host countries. Chinese MNEs respond to the sophisticated needs and higher product standards of customers in the advanced countries, and they set up their subsidiaries close to knowledge centers (e.g., universities or R&D centers) in those countries so that they can improve their own capacity for innovation by engaging in collaboration (Li, 2010).

Since there are different advantages and disadvantages associated with searching for knowledge regionally and globally, how then do Chinese MNEs decide on the appropriate internationalization strategy: regionalization or globalization? Prior research shows that this decision depends to a large extent on firms’ capabilities. Wu et al. (2016) argue that a firm
may seek to establish a global presence and expand to various markets that are not geographically close to China when it has and can use relevant and transferable technical knowledge. Further, Chinese MNEs that have relatively strong technological competencies, a clear commitment to research, and accumulated international R&D experience are better able to connect with firms, universities, and research institutions in more distant and advanced countries for business cooperation and knowledge exchange (Li & Bathelt, 2018; Yang, 2018). Finally, the global diversification of Chinese MNEs in search of knowledge resources seems to also depend on previous internationalization experience, as Wu et al. (2016) find that firms with greater regional diversification also tend to engage in greater global diversification. In contrast, Chinese MNEs with strong marketing know-how could decide to expand to other countries within the region because of similarities across markets. Having achieved their growth in a home environment that is institutionally weak, Chinese MNEs are able to adapt easily to unfavorable environments (e.g., those in which there is much red tape and corruption). This is a unique advantage that has, to some extent, shaped where Chinese MNEs choose to locate their subsidiaries (Yang, 2018).

Interestingly, Xie et al. (2016) point out that, unlike Western MNEs, Chinese MNEs cannot simply follow Western rules when trying to predict how knowledge-based resources will help them to internationalize. Having non-fungible market resources may be a hindrance to Chinese MNEs in terms of where they can expand internationally, while having fungible technological resources may not provide any significant benefits in terms of the speed at which they can internationalize. Therefore, from a resource-seeking strategy perspective, the nonsignificant relationship between knowledge-based resources and internationalization for Chinese MNEs might be attributable not only to low absorptive capacity, but also to cultural and institutional distance. Another interesting idea is that Chinese firms should engage in
knowledge search ambidexterity, and search for knowledge both regionally and globally (Wu & Liu, 2018).

In addition to the question of where to search for knowledge, research also provides insights into how Chinese firms enter into the foreign location to be best positioned to access and acquire knowledge. Existing studies predominantly point to mergers and acquisitions (M&As) and joint ventures (JVs) as preferred modes of entry in foreign countries when firms aim to seek knowledge abroad, with only limited insights into how greenfield operations contribute to knowledge acquisition. Cross-border M&As allow Chinese MNEs to better integrate subsidiaries’ resources, rather than simply exerting pressure to obtain core knowledge (Lebedev et al., 2015). The implication of this is that knowledge acquisition and diffusion depend on the post-integration within the parent firm and knowledge advancement of the acquired overseas subsidiaries (Li et al., 2019). Besides, the motives for MNEs from emerging markets such as China to seek JVs in overseas markets are dependent on the nature and location of the foreign business activity and the home country of the MNE. Specifically, this depends on the institutional environment in the firm’s home market, the technological needs, and the ownership structure of the firm (Beamish & Lupton, 2016). When it comes to the greenfield operations, Schaefer (2020) finds that, in the telecommunications industry, they are important for knowledge acquisition as it helps Chinese MNEs, like Huawei, to overcome liabilities of origin and outsidership. Comparing modes of entry, Elia et al. (2020) finds that Chinese MNEs’ portfolios of subsidiaries that have a higher proportion of M&As than greenfield investments tend to have higher innovative performance and argue that this is the case because M&As provide quicker access to advanced technology that is often embedded in foreign firms, while greenfield operations tend to rely more heavily on home knowledge and be more path dependent.
Some studies have started to consider the role of governance in accessing knowledge abroad (e.g., Fan et al., 2012; Gong et al., 2018; Kotabe et al., 2011; Yang, 2018). Chinese MNEs that are state-owned (SOEs) find it easier to reduce operational burdens and conduct cross-border M&As than those that are privately owned (POEs). Specifically, compared to POEs, Chinese SOEs do not experience the same fierce competition for resources, because their ownership structure contains a high proportion of government shares. SOEs have, for instance, easier access to financial aid from Chinese financial institutions and receive more tax allowances than POEs.

In addition, the conduit role of overseas subsidiaries enables Chinese MNEs to foster network ties with firms in foreign countries that have advanced knowledge and experienced local employees. Importantly, research shows that although there are large institutional and technological distances to the advanced countries, Chinese companies can overcome these by leveraging complementary advantages. That is, Chinese MNEs can draw on support (e.g., access to finance) from their home government to open the gateway to the advanced technologies directly, recruit experienced employees, and tap into the tacit knowledge of suppliers, customers, or even competitors in the host country (Li et al., 2012).

2.6.2 Reverse Knowledge Transfer from Overseas

The mainstream research focusing on Chinese MNEs’ intra-firm knowledge transfer pays particular attention to reverse knowledge transfer (Ciabuschi et al., 2017; He et al., 2018; Kong et al., 2018), rather than to mutual knowledge transfer or transfers from HQ to subsidiary (Chang & Smale, 2014; Zhong et al., 2015).

In a reverse knowledge transfer scenario, the subsidiaries in the host country are the senders, while the HQ or other domestic units of the Chinese MNE are the receivers. Kumar (2013) defines reverse knowledge transfer as the transfer of know-how and information about
products, processes, technologies, markets, government agencies, competitors, and suppliers from the subsidiaries to the company’s HQ. The process of transfer can run horizontally (i.e., from the overseas subsidiary to the home-country subsidiary) or vertically (i.e., from the overseas subsidiary to HQ, for the purposes of applying the knowledge domestically) (Kong et al., 2018). Because they have relatively few competitive advantages and few local assets in the host countries, Chinese MNEs use reverse knowledge transfer as an effective way of bringing advanced technologies to their home country (Ciabuschi et al., 2017). Though many studies focus on issues relating to intra-firm knowledge transfer (Ai & Tan, 2018; Duanmu & Fai, 2007; Kaufmann & Roessing, 2005; Yakob, 2018), the crucial question is how to stimulate and enable such knowledge transfer within Chinese MNEs.

From the existing literature, we identified factors at four levels of analysis that affect the critical issue of knowledge transfer in Chinese MNEs. First, at the organizational level, the focus is on the role of absorptive capacity and motivational factors in the context of knowledge transfer. A key consideration in existing research is that, oftentimes, the low absorptive capacity of the HQ acts as a barrier to the effectiveness of knowledge transfer from foreign countries (Ciabuschi et al., 2017). This issue is closely related to the explicit motivation of Chinese MNEs to acquire foreign knowledge from abroad to springboard the transition to an innovation economy.

In addition, reverse knowledge transfer from overseas subsidiaries to the Chinese HQ depends to a large extent on whether subsidiaries are willing to engage in this in the first place (Kong et al., 2018). As the Chinese parent firms generally have less knowledge than the overseas subsidiaries they have acquired, there are more opportunities for the subsidiaries to engage in opportunistic and rent-seeking behaviors. In addition, in contradiction to conventional concerns, extant work reports that the structure of Chinese MNEs and the
internal rivalries within them put obstacles along the path toward intra-firm knowledge transfer, and that, surprisingly, this can make foreign MNEs less fearful that crucial knowledge may leak to Chinese competitors (Ciabuschi et al., 2017; Kong et al., 2018).

The second group of factors that influences knowledge transfer in Chinese MNEs is at the relational level. Not only does the parent-subsidiary relationship affect the transfer of management knowledge (Kostova, 1999), but the social ties between the knowledge sender and the receiver are also crucial resources that greatly affect the effectiveness of the knowledge exchange (Hansen, 1999). Subsidiaries may compete to obtain a large share of the parent firm’s limited resources and managerial attention. Hence, shared vision and well-organized internal structures are important for enabling knowledge transfer within a single organization (Duanmu & Fai, 2007; Li, 2005; Lord & Ranft, 2000). In contrast to what has been argued in previous studies, the core responsibility of expatriate managers is to carry knowledge across the various units within a Chinese MNE (Chang et al., 2013; Kostova & Roth, 2002). Chang and Smale (2014) argue that the quality of coordination affects the efficiency of the knowledge transfer process when Chinese MNEs are transferring knowledge outwards to overseas subsidiaries.

The agency problem affects the willingness of subsidiaries to transfer knowledge to their HQ because the subsidiary might bargain with the HQ to obtain maximum interest (Kong et al., 2018). The deficient managerial skills and experience of Chinese expatriate managers could also lead to an agency problem. To overcome their relative inexperience with working abroad, expatriates must build strong network ties with both HQ managers in China and managers in firms in the host country so that cooperation and knowledge transfer activities can be conducted smoothly and effectively. Kong et al. (2018) point out that expatriate managers from Chinese MNEs pay more attention to reducing agency problems between subsidiaries.
and HQ, and endeavor to strengthen network ties with host country managers, instead of engaging directly in the knowledge transfer process, because the prerequisites for expatriate managers to perform reverse knowledge transfer successfully is that they can build strong social ties with local managers.

The interaction between the Chinese parent firm and its overseas subsidiaries affects the effectiveness of reverse knowledge transfer from the subsidiaries. The subsidiaries have valuable knowledge of their local context, which they can use as a bargaining chip in negotiations with the parent firm over greater autonomy, which has impeded the Chinese HQ and domestic units’ ability to directly absorb, utilize and apply knowledge. Chinese MNEs have increasingly understood that they need to adapt their managerial activities to the specific working environment of a particular host country and have negotiated ways of helping managers based in that country to develop their managerial capability instead of transferring Chinese activities directly (McKenna et al., 2010). The unwillingness of overseas subsidiaries to engage in reverse knowledge transfer has stemmed from a lack of trust between them and the Chinese parent firm. This is because the Chinese MNEs conducted outward FDI and sought internationalization mainly for knowledge exploitation, which meant that the acquired subsidiaries saw themselves as being used purely as resource pools (Schuler-Zhou & Schuller, 2013). Therefore, Chinese MNEs were forced to reconsider the motivation and retentive capacity of their overseas subsidiaries, and to view them instead as indispensable sub-units rather than merely as conduits (Chang & Smale, 2014). Also, through formal and informal interactions with foreign employees in the host country, Chinese expatriate managers have acquired managerial knowledge and international experience via experiential learning (Cooke et al., 2015; Wang et al., 2017), and can achieve better business performance not only because
they have more understanding of the local context, but also because they can draw on the knowledge of local staff (Li & Scullion, 2010).

The third set of factors that may influence knowledge transfer is located at the individual level. Chang and Smale (2014) argue that expatriates and returnees play important roles in transferring knowledge (especially managerial knowledge) between the Chinese HQ and the firm’s foreign subsidiaries, particularly in the context of integration processes (Kong et al., 2018). Although expatriates may possess superior technical skills in terms of their job performance, if they do not have the ability to pass their skills and knowledge on to others, this could still lead to poor performance in terms of knowledge transfer. To tackle this shortage of competent managers, Chinese MNEs place much value on learning-by-doing and see their acquired subsidiaries as a training platform, where expatriates can gain international experience and managerial know-how (Zhong et al., 2015). Cui et al. (2015) state that returnee managers are pivotal sources of experiential international business knowledge, used to facilitate the further internationalization of Chinese MNEs. How much impact the knowledge contribution of these returning managers may have on the organization can depend on the latter’s ownership structure – private ownership or central-state ownership of the Chinese government can strengthen its impact, whereas the regional Chinese government ownership may weaken the effect.

However, with the huge amount of outward FDI now taking place (e.g., Chinese outward FDI was 216.41 billion US dollars in 2016) (The World Bank, 2022), Chinese MNEs have increasingly realized that the importance of tacit knowledge has not been recognized in the knowledge transfer process. Having few managers with substantial experience of working internationally, Chinese MNEs could acquire only limited and mostly easily codifiable knowledge from foreign firms in the domestic host market, and were seldom able to compete
directly in overseas markets with MNEs from the advanced countries. Tacit knowledge from Western employees, firms and markets can only be acquired through social ties formed by individuals. The transfer of tacit knowledge is based on intensive interactions (Buckley et al., 2009) and mutual understanding of values, norms and routines (Bresman et al., 1999), which requires a high level of cultural integration. However, such integration is difficult because of the significant differences between China and advanced countries, and because Chinese managers do not have the requisite experience and capacity to handle the problems associated with this type of integration (Luo & Tung, 2007).

Chinese MNEs therefore typically choose to step back or even keep a distance from their Western subsidiaries, not only because of cultural issues, but also because they lack the global experience needed to handle the situation (Ai & Tan, 2018). This conciliatory cultural integration strategy means that they are sacrificing opportunities to acquire tacit knowledge, instead creating a peaceful environment for transferring explicit knowledge and for protecting the existing knowledge base of the acquired firms (Ai & Tan, 2018; Haspeslagh & Jemison, 1991). The rational response of Chinese MNEs, although neglecting the transfer of tacit knowledge, fits with their original knowledge goal – namely, to acquire technology. However, it also reflects the fact that they lack staff capable of obtaining tacit knowledge. Hence, employees who have adequate knowledge of cross-border human resource management and can deal with cultural differences are key for Chinese MNEs to advance the effectiveness of strategic asset-seeking abroad.

The final group of factors relates to the institutional level. Research shows that institutional differences act as barriers to knowledge transfer, and tries to identify ways to bridge these differences. One issue is due to differences in formal institutions as the Chinese parent firm’s embeddedness in a different political regime reduces the overseas subsidiaries’
trust in the parent firm, hindering reverse knowledge transfer (Ciabuschi et al., 2017). In addition to formal institutions, informal institutions such as differences in social factors also hinder knowledge transfer due to difficulties in communication and interaction between employees in foreign subsidiaries and the Chinese MNE (Chang & Smale, 2014). To overcome institutional differences, research focuses on Chinese MNEs’ efforts to integrate foreign subsidiaries into the larger MNE.

Specifically, research highlights the efforts of Chinese MNEs to implement HRM activities in their foreign subsidiaries that allow for more efficient communication and interaction between employees in foreign subsidiaries and those at the HQ. However, this is not easily achieved as some of the same social differences that affected reverse knowledge transfer also negatively impact the ability to transfer HRM activities from China to its foreign subsidiaries (Chang & Smale, 2014; Kostova & Roth, 2002). Research indicates that the direction of transfer (from East to West) may further exacerbate the issues associated with institutional distance when attempting to replicate home-grown HRM activities in host countries (Beechler & Yang, 1994; Chang & Smale, 2014). Hence, the integration of subsidiaries into Chinese MNEs becomes more difficult and the efficiency of reverse knowledge transfer is reduced.

Therefore, although Chinese MNEs invest abroad to access more advanced knowledge, there are important barriers at the organizational, relational, individual and institutional levels that hinder their ability to bring that knowledge home. However, in the next section, we discuss how Chinese MNEs avoid, to some extent, these barriers by directly using foreign knowledge abroad, rather than immediately attempting to transfer this knowledge back to the parent firm in China.
2.6.3 Knowledge Leverage Overseas

In addition to the strong governmental push for Chinese organizations to acquire foreign knowledge abroad, Chinese MNEs also leverage knowledge in the overseas arena. Several recent empirical studies have succeeded, by and large, in showing the various factors that influence knowledge utilization (e.g., Ai & Tan, 2018; Yang, 2018). Exploiting knowledge in overseas markets through outward FDI, Chinese MNEs are most influenced by institutional forces from both home and host countries, as well as network ties in the foreign countries (Cooke et al., 2015; Kotabe & Kothari, 2016; Yang, 2018). Network ties in a foreign country can strongly affect how Chinese MNEs use the acquired knowledge for enhancing their productivity and even upgrading organizational innovativeness. For example, building and maintaining a good relationship with the local authorities in the host countries (e.g., tribal chiefs) in Congo (DRC) is beneficial for doing business (e.g., fast approval from authorities and ease to manage local employees) in the host country. Because formal institutions (e.g., chamber of commerce) may either be non-existent or play a weak role (Cooke et al., 2015).

Commonly, underdeveloped institutions or threats from unfavorable business environments (such as corruption, red tape and/or nepotism) will make MNEs from the advanced countries less willing to invest overseas (Yang, 2018). By contrast, in such environments, Chinese MNEs have an advantage, as they can draw on their knowledge of how to deal with less favorable institutional environments (e.g., how to cooperate with inefficient bureaucratic systems, obtain scarce resources and deal with corruption). This gives them a broader range of options for internationalization and allows them to operate more smoothly in countries with weaker institutional environments (Yang, 2018). Such capabilities for operating in weaker institutional environments are developed through a long period of learning and imprinting in a firm’s home market, since developing such abilities is closely linked to the
social context (Yang, 2018). Therefore, the ability to operate in hostile institutional environments tends to be a unique advantage for Chinese MNEs compared to their counterparts from advanced countries (Argote & Miron-Spektor, 2011; Yang, 2018). This logic also applies to operating in countries or regions with stronger subnational institutions, such as provincial and municipal authorities, where Chinese MNEs can benefit from their experiential knowledge from their home country (Argote & Miron-Spektor, 2011).

Interestingly, research finds important differences between State-owned and private Chinese MNEs with regards to where and how they utilize knowledge abroad. A key distinction between the two is that while State-owned MNEs rely on considerable financial and institutional support from the government when actively responding to the national “Going Out” policy, privately-owned MNEs expanding into overseas markets receive less governmental assistance and fewer resources. Because of lower reliance on government support, private Chinese MNEs make different location choices (Duanmu, 2012). However, State-owned Chinese firms face higher standard auditing regulations and stricter procedures than private firms, so joint venture businesses between State-owned and private firms can help to handle the expenses, which cannot be directly claimed through the State-owned enterprise (Cooke et al., 2015).

2.6.4 Government Impact in the Overseas Orientation Phase
Driven by vast outward FDI, Chinese MNEs were motivated, and benefited from, considerable government impact or even direct support (e.g., tax reductions and subsidies) during the outward internationalization period. Therefore, Chinese MNEs (both Chinese POEs and SOEs) are internally and externally motivated to seek overseas strategic assets and increase innovation-based competitiveness via internationalization, with the backing of Chinese
policies, and with the Chinese government intervention having both positive and negative impact on Chinese MNEs.

Chinese MNEs are affected by government impact at the operational level when the Chinese government is closely involved in helping Chinese firms build and maintain political ties with foreign institutions and MNEs for knowledge exploitation (Li & Atuahene-Gima, 2002; Mei & Zhang, 2020). For instance, with the help of Chinese premier Keqiang Li through ‘HSR Diplomacy’, the Chinese railway company (CRRC) entered into the EU market for the first time, signing the Hungary–Serbia high-speed rail cooperation agreement in 2015 (Mei & Zhang, 2020). The Chinese government also promoted the knowledge exploration of Chinese MNEs to conduct forceful strategic asset-seeking FDI in advanced markets to seek critical knowledge and valuable, rare, inimitable and non-substitutable (VRIN) resources (Barney, 1991; Li et al., 2021; Luo & Tung, 2007). For instance, CRRC aggressively conducted M&As in search of core technologies (e.g., the insulated gate bipolar transistor technology acquired from the Canadian company Dynex) pushed by the promotion policies of ‘226 Office’, a specific institution reconstructed by the Chinese government responsible for operating high-speed trains (Mei & Zhang, 2020).

However, although Chinese MNEs receive such impressive benefits from Chinese government, this type of intervention can also hamper the learning and transfer of knowledge from overseas markets. This is largely due to the institutional heritage of Chinese MNEs and the huge organizational distance between Chinese HQs and their acquired foreign subsidiaries (Su et al., 2020). Ciabuschi et al. (2017) point out that Chinese MNEs’ unique institutional heritage leads to foreign subsidiaries’ untrust and quest for organizational legitimacy. This lowers organizational efficiency and flexibility in attracting and retaining ‘top talent’ (e.g., top engineers and managerial employees). As a result, the inadequacy of talents in Chinese MNEs
causes low absorptive capacity, which is a hindrance to transferring advanced knowledge from overseas subsidiaries (Cohen & Levinthal, 1990).

In addition, Chinese MNEs are constrained by their bureaucratic and hierarchical organizational structure owing to government regulations and policies. Therefore, the process of information delivery takes much more time, inevitably reducing the efficiency and effectiveness of overseas reverse knowledge transfer (Ciabuschi et al., 2017). Thus, Chinese MNEs must overcome the challenges of adapting to their home market’s ‘rules of games’ (e.g., unfamiliar organizational routines and institutional environment) in overseas markets, and proactively avoid political embeddedness both in their organizational culture and structure to frustrate acquiring advanced knowledge (Li et al., 2021).

2.7 Global Orientation: Linking Global Innovation Centers with Knowledge Management

Thus far, research has predominantly focused on how Chinese MNEs build and use their knowledge stock, both at home and abroad. However, Chinese MNEs are moving into a new third phase in which they integrate and create new knowledge through their global footprint. The first two phases enabled Chinese MNEs to augment their absorptive capacity to engage in global knowledge creation after integrating acquired external knowledge with existing internal knowledge through operational and structural adjustments (Haasis et al., 2018; Kotabe et al., 2011).

2.7.1 Knowledge Integration and Creation

Knowledge is created by individuals, while an organization cannot create knowledge without individuals (Nonaka, 1994). Organizational knowledge creation is, therefore, a process of "organizationally" amplifying individual knowledge creation, which is seen as a part of the
knowledge network of an organization (Nonaka, 1994). In this sense, firms' fundamental role is the integration of specialist knowledge distributed among individuals (Grant, 1996).

Moreover, as this global knowledge integration and creation phase is still emerging, existing research explaining how Chinese MNEs progress into and through this third phase is still in its early stage.

Sustaining Chinese MNEs' competitive advantage in the context of dynamic global competition requires continuous knowledge generation, a flexible "synthesizing" through (a) existing knowledge integration via organizational new patterns reconfiguration, and (b) new knowledge creation via extended organizational capabilities (Grant, 1996). Despite the recent advent of the third phase, some important insights can already be noted. A salient view is the compositional springboard theory (Li et al., 2021), which suggests that Chinese MNEs should leverage the core capabilities of springboarding (i.e., amalgamation, ambidexterity and adaptability) to adapt and balance the compositional and springboarding logic in order to facilitate adapting to the shift in domestic market demands and to have success in the journey of internationalization.

Specifically, by strategically and dynamically emphasizing and integrating ordinary resources obtained from home and acquired VRIN resources via asset-seeking M&As from overseas markets (Barney, 1991; Dunning, 1993), Chinese MNEs can strengthen their innovation capability in order to achieve sustainable competitive advantages along the iterative evolution process by developing diverse value-chain activities across national and global marketplaces.

Research indicates that Chinese MNEs are increasingly getting involved in global knowledge integration and creation by leveraging their cross-border M&As, by engaging in outward FDI, and by participating in joint ventures and business alliances (Chi & Zhao, 2014;
Haasis et al., 2018). Rui et al. (2016) argue that Chinese MNEs innovate and upgrade their capabilities through learning-by-doing in the form of an iterative trial-and-error process that incorporates and synergizes external knowledge from worldwide sources. Providing nuance to this argument, Chi and Zhao (2014) suggested the notion of architectural competence, which refers to the capability to integrate different areas of abilities and skills to develop new product configurations, as central to Chinese MNEs’ innovation capability and hence long-term competitiveness.

Chinese MNEs are equipped with an adaptable mindset in their pursuit of international activities, especially in constructing global R&D networks to generate new technology (Vukicevic et al., 2021). Research emphasizes the transition of Chinese MNEs from knowledge acquisition and transfer to global knowledge creation by showing that Chinese MNEs also tend to open new offshore R&D centers after conducting M&As do as to facilitate interactions with the acquired firms (Kotabe et al., 2011). They exert minimal parental influence on current overseas subsidiaries, which keeps local management structures unchanged. Subsequently, overseas subsidiaries, as important centers for technology creation, can gradually be embedded in global Chinese R&D networks to move Chinese MNEs (especially Chinese SOEs) beyond simply accessing existing technologies from advanced markets to pursuing the creation of new ones on and of their own (Kotabe et al., 2011).

Hertenstein and Williamson (2018) highlight this in their discussion of the Chinese MNEs’ selection of innovation strategies (e.g., incremental and radical innovation). This selection is affected by the relationship between suppliers from the advanced countries, which closely interacts with the advanced-country MNEs over a long cycle but only provides innovation opportunities regarding modular components and sub-assemblies for Chinese MNEs. Because of this, Chinese MNEs largely rely on integrating external technology from
global markets in order to create knowledge and generate new products, which are improved through rapid design iterations after receiving market feedback. The globally dispersed R&D centers of Chinese MNEs function as knowledge-communication hubs to collaborate with suppliers that are responsible for facilitating knowledge integration and creation, rather than for simply internalizing acquired knowledge from overseas subsidiaries (Hertenstein & Williamson, 2018).

2.7.2 Government Impact in the Global Orientation Phase

The ever-changing global political environment is impacting Chinese MNEs. The advanced countries may close the door for them to continue their current knowledge-generation strategies (Vukicevic et al., 2021). Moreover, owing to intense national competition, Chinese MNEs encounter obstacles in acquiring foreign firms with technological firm-specific advantages. For example, from a national security point of view, the US has become more cautious about the M&A activities conducted by Chinese MNEs than the EU (United States-China Economic and Security Review Commission, 2017), but the EU is likely to follow in the US’s footsteps. The policymakers in the EU and US perceived and understood the technological focus of Chinese MNEs (especially Chinese State-owned MNEs). They have seen the Chinese MNEs' increasing access to advanced technologies as potential threats to the competitiveness of Western MNEs, and subsequently as threats to the predominant role of the EU and US in the global economy (Vukicevic et al., 2021).

Surpassing the “Market for Technology” period of policy (Mu & Lee, 2005), the “Made in China 2025” and “Belt and Road” policies of the Chinese government clearly articulate the need to continue national economic development underpinned by innovation and overseas investment (Vukicevic et al., 2021). After a long period of learning from overseas markets, Chinese MNEs start practicing the consequences of understanding of the strategic
importance of self-creating knowledge, beyond reacting to Chinese government innovation initiatives. Simply acquiring knowledge from external sources may not increase firms’ new product market performance, which requires the full presence of realized absorptive capacity, strong knowledge exploration ability, and powerful organizational ambidexterity (Kotabe et al., 2011; Raisch & Birkinshaw, 2008; Tushman & O’Reilly, 1996). Hence, both exploitation and exploration are essential for improving innovation capability and boosting product performance, which can empower Chinese MNEs in competing with global market leaders during the process of internationalization (Choi et al., 2019; Zhou et al., 2020).

2.8 Outcomes of Knowledge Management among Chinese MNEs

Research considers several important outcomes of knowledge management among Chinese MNEs, of which two stand out: (i) innovation and learning and (ii) competitiveness and internationalization.

2.8.1 Innovation and Learning

Innovation and learning are key outcomes of knowledge management in Chinese MNEs in existing research (e.g., Du et al., 2017; Xie et al., 2016). Above, we mentioned that Chinese MNEs can acquire knowledge both at home while interacting with foreign firms operating in China and abroad through strategic knowledge-seeking. The extent to which such learning takes place depends to a large extent on both macro and firm-level factors. In line with the arguments that Chinese MNEs first attempted to bridge the knowledge by acquiring knowledge at home, Wang and Kafouros (2009) find that FDI in an industry is positively related to the industry’s innovation performance, but that this effect depends on the industry’s level of technological opportunity (i.e., the extent to which there is a richer set of opportunities for technological advancement). Also, considering innovation at the industry level, Li et al.
(2016) reveals that outward FDI in search of strategic asset acquisition has a strong positive influence on innovation performance at home. However, the extent to which this materializes depends on the level of competitiveness in an industry such that higher industry competitiveness reduces the effect (Wang & Wu, 2016). The reason for this is that firms may be less inclined to invest in R&D at home because of resource constraints and fear of not being able to sufficiently appropriate the benefits of their investments due to inadequate intellectual property protection.

So far, we have discussed how macro factors associated with the home environment affect Chinese MNEs’ ability to use foreign knowledge for innovation; but similarly, the macro factors of the host environment also play an important role. One such factor is institutional development of the host country. Wu et al. (2016) find that higher levels of institutional development in a Chinese MNE’s international footprint lead to higher levels of innovation of the parent firm. They attribute this effect to more opportunities to access advanced technology, develop innovation networks, and leverage innovation intermediaries, although the extent to which Chinese MNEs can benefit from this depends on their absorptive capacity and share of State versus private ownership, with more State ownership dampening the effect. Similarly, Piperopoulos et al. (2018) reveal that the level of innovation of Chinese subsidiaries depends on the host country’s development, with those located in the advanced countries exhibiting higher innovativeness than those located in emerging countries. Further, acknowledging that an MNE can have multiple foreign subsidiaries operating in various institutional environments, research suggests that there is an inverted U-shaped relationship between international institutional complexity and the innovativeness of Chinese MNEs, such that the highest innovation output is achieved at a moderate level of international institutional complexity (Wu & Park, 2019).
In addition to macro-level factors, there are also firm-level factors that affect Chinese MNEs’ ability to improve their innovativeness by accessing foreign knowledge. Several studies highlight the importance of absorptive capacity in leveraging foreign knowledge for innovation. Foreign knowledge can stimulate Chinese MNEs’ innovativeness by enhancing their absorptive capacity (Liu et al., 2019). Absorptive capacity works not only as a driver of innovation (Wang & Li, 2017) but also as a key boundary for accessing and using foreign knowledge within Chinese MNEs. Although Chinese MNEs often aim to bridge knowledge gaps through strategic knowledge-seeking policies abroad, research shows that knowledge differentials have a detrimental effect on their ability to improve innovativeness by acquiring foreign firms with the desired knowledge (Wu et al., 2015).

An interesting finding in prior research is that the role given to a newly acquired foreign company affects its contribution to the overall innovativeness of the firm, with the highest impact emerging when the subsidiary is given a specialized role in the MNE’s global innovation network (Wu et al., 2015). Also important for stimulating innovation by acquiring foreign firms is the establishment of cultural integration to smoothen knowledge transfer (Wu et al., 2015). When it comes to how acquiring knowledge from foreign firms operating in China affects Chinese enterprises’ innovation, Wang and Wu (2016) report that the positive effects on innovation are more pronounced for horizontal (i.e., from firms engaged in the same type of value-chain activity) rather than vertical (i.e., from firms engaged in a different value-chain activity) spillovers and for cross-sector rather than intra-sector knowledge.

In addition to innovation, research shows that by acquiring knowledge from foreign sources, Chinese MNEs can stimulate organizational learning and upgrade their capabilities. Organization capability upgrading refers to participation in higher value chain production with enhanced efficiency from advanced technology (Giuliani et al., 2005). Chinese MNEs and
their subsidiaries in foreign markets upgrade their capabilities via a multidirectional flow of knowledge. Interestingly, although Chinese MNEs may acquire foreign firms to gain access to specialized or advanced knowledge, He et al. (2018) reveal that the acquired subsidiaries in the foreign country experience an upgrading of capabilities themselves. They explain this counter-intuitive finding through the fact that the newly acquired foreign subsidiary benefits from the Chinese MNEs’ leading position in the global value chain in combination with complementary assets. So, He et al.’s (2018) findings challenge the conventional view that Chinese MNEs only acquire knowledge from relatively more technologically advanced foreign subsidiaries by shifting the perspective to “co-learning” between the Chinese MNEs and their foreign acquisitions. In addition, Chinese MNEs can create a win-win for both sides (i.e., for themselves and the overseas subsidiaries they acquire) so that their subsidiaries can progressively upgrade their capabilities instead of being purely suppliers of knowledge.

2.8.2 Competitiveness and Internationalization

The initial aim of Chinese MNEs was to internalize the explicit, functional and codified knowledge acquired from Western MNEs through business cooperation in the domestic market (e.g., through functioning as upstream suppliers). This paved the way to increase their competitiveness in both the home and the global market. Alongside their existing resources in the home market (e.g., financial aid and low-cost labor) and through initiatives to seek strategic assets overseas, Chinese MNEs obtained competitive advantages by transferring and integrating advanced knowledge from Western MNEs into their global operations. In addition, the knowledge they have acquired from advanced countries has enhanced the profitability and productivity of Chinese MNEs, especially when combined with their accumulated experience in their home market (Liu et al., 2016; Patel & Vega, 1999; Wang et al., 2012; Yu et al., 2015; Zhong et al., 2013).
However, Chinese MNEs still must resolve several difficulties that are often experienced in knowledge management (e.g., ineffective knowledge transfer or ditto application of knowledge due to cultural differences), particularly when faced with macro and micro-level impediments (such as institutional distance and low absorptive capacity). Specifically, to overcome these difficulties, Chinese MNEs can increase the effectiveness of knowledge transfer and application by selecting managers with good interpersonal skills and sufficient global experience acquired through working abroad (Chang & Smale, 2014).

In addition to boosting competitiveness and financial performance, knowledge acquisition also supports Chinese firms’ internationalization efforts. That is, by sourcing technological knowledge from foreign countries and learning how to operate abroad in the process of doing so, Chinese MNEs can further bolster the speed and scale of their globalization strategy (Cooke et al., 2015; Wang et al., 2012; Yu et al., 2015; Zhong et al., 2013). This effect of knowledge sourcing on internationalization is affected by the R&D intensity of a firm and the level of technology in the industry in the home country (Wang et al., 2012).

2.9 Moving Forward: Future Research Directions

While research on Chinese MNEs’ global knowledge integration and creation is growing, it is still in an incipient stage, implying that much more needs to be done, especially considering the increased prominence of this phenomenon in the daily practice in the world of international businesses. Therefore, in this section, we provide several recommendations for future research based on emerging trends in knowledge exploration and current discussions on knowledge management, including processes and outcomes, as shown in our comprehensive framework.
2.9.1 Shifting from Knowledge Acquisition / Transfer to Knowledge Creation

As discussed in the previous section, Chinese MNEs are moving from knowledge acquisition and transfer to knowledge creation. However, there is still much to be studied about this new third phase. For instance, future research could attempt to understand the management principles and activities or ways of organizing (cf. Volberda et al., 2011) that Chinese MNEs need to adopt to successfully transition from managing knowledge transfer between foreign countries and the home market to orchestrating complex global knowledge flows that allow the integration of specialized knowledge to develop new capabilities. This might imply not only new strategies for seeking and obtaining foreign knowledge, but also new ways to engage with a multicultural and geographically disparate workforce. Future research in this direction should also take into consideration the unique and changing features of the Chinese social, economic and political environment.

Furthermore, as this new phase of global knowledge creation implies closer integration with foreign locations, future research could explore the sustainable development and co-evolution of Chinese MNEs and the host countries (Mihalache & Volberda, 2021). How can Chinese MNEs best interact with firms in the host countries and their personnel to stimulate knowledge generation and economic growth, especially considering Chinese MNEs’ embeddedness in multiple institutional environments? For instance, will the organizational and cultural differences between Chinese MNEs and the stakeholders of various local interest groups conceal the contributions made by Chinese MNEs (e.g., foreign authorities’ anti-Chinese propaganda in line with geo-political interests)? Which mechanisms and procedures might be used to help deal with the differences in interest between Chinese MNEs and firms in foreign countries? Are these mechanisms and procedures affected by differences in location (i.e., advanced vis-à-vis emerging countries)? Chinese MNEs not only benefit from the
knowledge obtained in foreign countries, but also contribute to these host regions in terms of economic growth and production of knowledge. However, their contribution does not always seem to be appreciated by local communities in the host countries or regions, which creates obstacles to deepening cooperation and development (Zeng et al., 2019). Thus, future research could further investigate how Chinese MNEs can better engage within foreign countries with local communities to make the relationship more beneficial for all stakeholders involved.

Moreover, future research could specifically explore how Chinese MNEs can best manage the diversity of institutional environments to stimulate global knowledge creation. In our review, we explained the reasons for the different innovation and business performance strategies and outcomes of Chinese private versus State-owned MNEs operating in the same institutional environment (Yang, 2018). Other studies consider how Chinese MNEs transfer knowledge to firms in emerging countries with a poor institutional environment (e.g., Cooke et al., 2015) using technologies and business models copied from Western firms (Kaufmann & Roessing, 2005; Wang et al., 2012). To gain a fuller understanding of how the institutional environment affects business and innovation performance, we suggest that it would be useful to explore how different institutional or social environmental features facilitate or hamper business growth and knowledge generation in technology-intensive industries. For instance, inadequate governmental market supervision can lead to disorderly competition; however, it can also incubate innovative companies because of less government intervention.

We also propose an increased exploration of how the complexity of international institutional characteristics influences the innovativeness of MNEs in emerging markets. For instance, what are the international enablers or obstacles for Chinese MNEs when seeking to obtain knowledge and enhance their innovativeness in such markets? What can explain
differences or lack thereof with advanced countries, as well as across different emerging economies?

2.9.2 Knowledge Management in the Context of Digital Transformation

Our framework highlights the main actions taken by Chinese MNEs in overseas markets in terms of acquiring and transferring advanced knowledge, the latter to their HQ and among subsidiaries. However, there are now emerging Chinese tech companies and even digital giants entering global markets and exporting new business models seriously competing with Western tech firms’ counterparts (Chen, 2017). For example, TikTok, an overseas subsidiary of the Chinese technological MNE ByteDance, is headquartered in San Francisco. During the first half of 2018, the TikTok app overtook Facebook, YouTube and Instagram as the most downloaded iOS app in the world, according to Sensor Tower data (Chen, 2018). Therefore, future research should focus on knowledge transfer/sharing behaviors in the digital era in which Chinese MNEs are exporting advanced knowledge/business models to the advanced countries.

Future research can also attempt to increase our understanding of how digital Chinese MNEs can best organize themselves globally. For digital businesses to be successful, their cognitive models, organizational modes and ecosystems may need to be different from those of traditional firms (Volberda et al., 2021). For instance, researchers could investigate the cognitive models of successful digital Chinese MNEs, such as ByteDance, and how these cognitive models can be shared and transferred across organizational boundaries and national borders. Research can also attempt to uncover the different ecosystem strategies of digital Chinese MNEs and how these differ based on the institutional conditions of the countries in which they operate.
Further, our understanding of intellectual property protection might need to be adjusted for the digital world. Of the articles reviewed here, 16 papers (e.g., Kotabe & Kothai, 2016; Rui et al., 2016; Wu et al., 2016), mostly published in 2016 and 2008, discussed intellectual property rights issues in China—specifically, how to protect intellectual property and how to avoid crucial knowledge leaks from foreign MNEs to Chinese firms. A few of these studies noticed new trends in the protection of intellectual property; Chinese MNEs are becoming increasingly aware of this issue and are strengthening their protection mechanisms. They are also experiencing growing fatigue regarding knowledge exploitation and observing diminishing benefits. Therefore, research should investigate how intellectual property protection can grow, and empower the knowledge exploration and internationalization of emerging Chinese MNEs. For example, by continuously investing in 5G technology, Huawei is currently the leading provider of 5G technology and the world’s largest owner of 5G technology patents (IPlytics, 2022). Chinese MNEs’ persistence in achieving technological upgrading can be illustrated by Mr. Ren Zhengfei, the founder of Huawei, who declared that ‘Huawei’s 5G technology is born to fight in the “battle” for taking over the high-end market in the world’ (Huawei, 2019).

2.9.3 Engaging with Local and Foreign Governmental Agents

As discussed in this review, an important characteristic of Chinese MNEs’ knowledge management activities is the impact of government bodies and policies, which influences their decision-making processes and strategies (Zhou et al., 2017). We also observed that these government connections can sometimes aid and sometimes hamper Chinese MNEs’ ability to acquire, leverage and generate knowledge abroad (Ambos et al., 2006; Simonin, 1999; Su et al., 2020).
Future research could further probe into how Chinese MNEs can actively manage this relationship, both at home and abroad, to better understand how to leverage its positives and minimize its negatives. It would also be useful to examine more deeply how government relations are affecting Chinese MNEs’ ability to manage knowledge, as it pertains to growing and potentially sensitive industries, such as artificial intelligence and big data. Several governments around the globe are taking an increased interest in these new and rapidly emerging industries. Future research could attempt to uncover ways to navigate these complicated relationship nexuses.

2.9.4 Chinese MNEs Competing with Advanced-Country MNEs in Emerging Markets

Through our sampled articles, we found that the previous literature on Chinese MNEs’ internationalization and knowledge management activities has always combined strategic asset-seeking with market-seeking motives (Child & Rodriguez, 2005; Deng, 2009; Elia et al., 2020; Luo & Tung, 2018). Moreover, the prior literature does not successfully disentangle the firm-specific advantages of Chinese MNEs (especially Chinese SOEs) from their country-specific advantages. However, in practice, it is difficult to distinguish firm- and country-specific advantages, especially for Chinese State-owned MNEs that rely on governmental funding and subsidies (Ramamurti, 2012; Sutherland et al., 2020). For example, the automobile industry is considered strategic due to its potential for county-specific and firm-specific development (Rugman & Verbeke, 1992). Chinese automobile firms are often government-supported or even fully State-funded, and are heavily involved in global competition (e.g., Dongfeng is a full SOE, King-Long is a semi-privatized SOE, Yutong is a partially privatized SOE and Geely is a fully private company).

Chinese MNEs in the automobile industry not only have the advantage of access to one of the largest and fastest growing automobile markets (i.e., the Chinese market), but also enjoy 82
cheap labor and governmental support. In addition, Chinese MNEs have greatly increased their manufacturing superiority and operating knowledge after 10–20 years of learning from Western countries (e.g., Geely exploited its firm-specific advantages gained from Volvo and then expanded its sales in the EU market) (Hertenstein & Alon, 2022). Furthermore, Chinese MNEs are leveraging the EU market as their testing ground and experimental field. They locally manufacture and sell only a small portion of vehicles in the EU market to prove that their products can satisfy the quality and technological standards and requirements of the EU market. Their true purpose is to compete with advanced-country MNEs in China and in other emerging countries (Hertenstein & Alon, 2022).

Chinese MNEs have mastered new firm-specific advantages that combine country-specific and institutional advantages with firm-specific advantages acquired from technological leapfrogging experience (Bartlett & Ghoshal, 2000; Hertenstein & Alon, 2022). Thus, in this area, some future research suggestions are: (i) it is important to re-examine the influence of knowledge-seeking motives on Chinese MNEs through government-encouraged radical cross-border M&As, and (ii) it is vital to increase our understanding of how the advanced-country MNEs compete with Chinese MNEs in China and other emerging countries.

2.9.5 Chinese Socio-Cultural Effects on Knowledge Management

Several studies in the review show that Chinese MNEs are now turning the experience of working in an unfavorable institutional environment into an advantage that helps them adapt easily to a foreign market with similarly weak institutions, thereby enabling them to excel (Luo, 2005; Yang, 2018). This idea can be explored further to investigate how they acquire and transfer knowledge from firms in emerging countries. For instance, will trading with firms from emerging countries affect the learning and innovation behavior of Chinese MNEs and, ultimately, their operational performance and internationalization? For Chinese MNEs, what
are the similarities and differences between the advanced and emerging countries in terms of knowledge acquisition and transfer? How can they integrate and synergistically utilize the experience of knowledge acquisition, transfer, and integration in the advanced and emerging countries?

Future research can also take into consideration the changing social conditions within China. For instance, how do the characteristics of customers in the host countries affect Chinese MNEs’ knowledge management activities? As Ma and Hu (2021) argue, the Chinese MNE ByteDance leverages the growing local demand for technology and the high willingness of Chinese customers to engage with mobile consumption to first test new features domestically before making them available in foreign markets where its TikTok app operates. Essentially, we are observing that the changing characteristics of Chinese consumers support a reverse knowledge flow, where more advanced features are pioneered domestically before being rolled out in what are traditionally considered more technologically advanced countries. Moreover, the series of changes happening in Chinese society and economy is robust but nuanced. Examples involve the rise of the middle class, the emergence of digital technology and platform-centric industries, and the valuing of digital privacy. It is affecting the way how Chinese MNEs integrate and leverage home and global assets, and the nature of their strategies for enhancing self-competence. Thus, Chinese MNEs should cope and harness the local and global trends, which may lead to success by "sailing against the tides but going with the flow".

In conclusion, this study aims to integrate insights into the knowledge management activities of Chinese MNEs. We have identified six topical clusters and three evolutional phases that we integrated in a conceptual framework of knowledge management for Chinese MNEs in particular, which may well apply to all MNEs in general but particularly so for those
MNEs from the emerging countries. In addition, we have put forward multiple avenues for future research. We hope that our study will stimulate more research in this critical domain, not only regarding Chinese enterprises, but also targeting firms from other emerging countries to further deepen our understanding of home country-specific differences and similarities.
CHAPTER 3

BUSINESS MODEL INNOVATION AND EXPERIMENTATION IN TRANSFORMING ECONOMIES: BYTEDANCE AND TIKTOK

ABSTRACT

Firms from transforming economies can leverage the characteristics of their location to develop innovative business models before internationalizing. This note showcases ByteDance’s innovative business model for its TikTok app, which became one of the most downloaded apps globally. ByteDance used its large and increasingly demanding home market to experiment with creative combinations of business model elements to develop a unique business proposition that positions the TikTok app as a hybrid of social networking and video-sharing. In addition, TikTok benefitted from China’s IT strength supported by national high-tech policy to an AI-based recommendation algorithm as a non-location bound resource. TikTok shows that firms from transforming economies can launch successful global products through business model innovation.

Keywords: business model innovation, globalization, international strategy, TikTok, transitional economy

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3.1 Introduction

China is a transition economy that ranks as the second-largest economy in the world (The World Bank, 2020) and has strong aspirations to move up in the value chain and enhance its innovativeness. This push for improved innovativeness is additionally supported through a ‘Going Out’ policy that encourages Chinese firms to internationalize (Zhong et al., 2015). Combined with a large consumer base with increasing buying power and demand for new products and services, the transforming economy of China provides a particularly fertile ground for firms to develop new business models as they prepare to compete on the global arena. Business model innovation is crucial for Chinese companies and entrepreneurs to not only capture and create value but also challenge incumbent firms that cope with the ‘tired’ old business model (Volberda, Mihalache et al., 2017; Volberda, Van Den Bosch et al., 2017).

A prime example of business model innovation is ByteDance, a Chinese high-tech company that is rapidly entering overseas markets by launching apps like TikTok. TikTok is a social media app that people use to watch, share, and make short video clips. TikTok is an app developed primarily for the international market that is based on Douyin, which serves the Chinese market. Both TikTok and Douyin are products of ByteDance, a Chinese 75 billion USD start-up company that was recognized as the ‘most valuable startup company in the world’ in 2019 (Beat, 2019; Sender, 2019).

TikTok’s success is due largely to ByteDance’s effective business model innovation. First, TikTok combines successful business models in a creative way to develop a unique business proposition: it features elements of social networking and video-sharing platforms to deliver a new way to create value for consumers. Second, ByteDance used its domestic market as an experimentation lab, testing sections of the business model before implementing them abroad. ByteDance and TikTok show how organizations from transforming economies can
create new business models through a combination of copying elements of successful business models and innovating new features that they rapidly test in their home market.

3.2 ByteDance and TikTok

TikTok is positioned as a live-streaming social networking service focusing on music sharing that allows users to perform short dances, lip-sync, comedy, and talent videos (Schwedel, 2018). Generally, the videos posted on TikTok are 15 seconds long and can go up to 60 seconds. TikTok users are primarily teenagers and young adults with 41% of users between 16 and 24 years old; overall, users spend 52 minutes on average per day on the app (Iqbal, 2020). Users can directly watch their favorite videos immediately after opening the app and scrolling down to another video in a time- and energy-saving way, unlike YouTube, which requires users to choose a video from many choices. TikTok and Douyin’s appeal is due to its providing a platform for young people to show themselves, fill fragments of leisure time, and acquire information.

ByteDance launched the Chinese-market app Douyin in September 2016 and positioned it as a short music video community suitable for Chinese young people. TikTok was launched in 2017 and later combined with Musical.ly, which was also a short video app that was acquired by ByteDance for around 1 billion USD in 2018. After the acquisition and combination, the users transferred from Musical.ly to TikTok.

TikTok became one of the most popular apps in the world, according to data from Sensor Tower (Chapple, 2020). It was downloaded more than 738 million times in 2019 and the total number of downloads surpassed 1.9 billion in Google Play and the Apple Store. TikTok has been introduced in 155 countries and regions in 75 languages and the number of
monthly active users is more than 800 million (Mohsin, 2020). Under pressure from TikTok’s fast growth, Facebook tried to compete by releasing a similar app called Lasso but failed.

3.3 Key Elements of TikTok’s Business

3.3.1 Combining Elements of Various Other Businesses – Innovation vs Imitation

TikTok provides an interesting value proposition as it combines various essential functions of other popular apps such as Instagram, Facebook, YouTube, Twitter, and Vine. While the various elements of TikTok might be traced to other apps, their combination is unique and its delivery is more user-friendly. TikTok enables users to watch and produce video clips, which is similar to YouTube. Compared with the square videos of YouTube, Instagram, and Snapchat, the tall videos of TikTok allow users to see videos directly in a full-screen mode. TikTok users only need to scroll down on their smartphone to play and shift between videos without having to choose what to watch next. The core ability of TikTok is the powerful algorithm that recommends content for users based on their prior choices such as likes, shares, or location. This total automation of video playback makes TikTok more user-friendly than YouTube or Instagram where users still have to choose the next video from an algorithm-recommended list. Furthermore, the scrolling video selection mode of TikTok is more suitable for one-hand or one-finger control than the tapping or swiping selection mode of other apps such as Instagram. Just like other video editing apps (e.g., Vine), TikTok users are allowed to film a video for a maximum of 60 seconds, which is shorter than YouTube but more appropriate for lip-syncing and other fun videos. TikTok provides many resources for users to make videos. For instance, there are many filter options to combine with a massive range of sounds from songs or clips from TV shows, online videos, or from other users. The numerous resources TikTok provides users to make videos lowers the risk and threshold of video
creation. Users can join challenges, make jokes, or even record their daily life and post on TikTok without feeling too self-conscious as they might when posting on Instagram or Facebook.

But TikTok is not only a video app; it is also a social networking app. TikTok encourages normal users to follow and message each other, just like on other social software, as interactions among users strengthen the stickiness of the app. TikTok also contains key opinion leaders (KOL) or even ‘online celebrities’ cultivated by the company itself. In addition, Douyin, the twin app of TikTok, contains the same functions of TikTok but also combines the business models of Google and Amazon to empower and encourage users to search for information and shop online (Herrman, 2019).

3.3.2 Technological Assets – A Unique AI Algorithm

TikTok transfers the powerful AI-based algorithm system from Douyin to liberate users from numerous choices of videos and accurately feed them their favorite content. The AI-based algorithm of TikTok determines users’ tailored information distributions based on analyzing the content of each video and watching the preference of users to perform an endless and highly attractive video stream. More specifically, TikTok performs real-time traffic distribution based on the analysis of the users’ hashtags, personas, and feedback data that include views, engagement (e.g., like, comment, share), and audience breakdown (e.g., market segmentation, ages, genders, devices). TikTok practices its philosophy by feeding everyone personalized, favorable content through consistently recommending similar content that can be shared, replicated, and built on. TikTok touted the algorithm as computer vision to extract and categorize visual information that relies on users’ watching history and engagement patterns to serve users’ interests. In short, TikTok controls your menu of entertainment by observing your
reactions to each past video. Therefore, TikTok users don’t need to think and search for the videos but are fed personal preference-based videos, which is a crucial part of TikTok.

The AI algorithm of TikTok and Douyin is generated from another of ByteDance’s apps, Toutiao, which provides personalized feed news for each user by analyzing the content of news and users’ preferences and interactions of content. TikTok users are able to form chain effects for a song or dance because of technology that can modularize complex forms of content to reduce the threshold for user participation and ensure the continuity of the contents’ core nature. Then, the technology ensures the continuity of emotion embedded in the categorized content.

In the view of Yiming Zhang, the founder and CEO of ByteDance, the formula of internationalization is to present global products served with localized content. The central technology for TikTok is the AI algorithm, which provides the universal product that will determine video recommendations based on learning users’ preferences and usages of the app, which is a unique advantage. But the most pivotal distinction is the content, which is the secret success of both apps. Foremost, it could cope with the different regulation and censorship systems of different countries for building a clean and healthy virtual environment (e.g., prohibit alcoholic, violent, and pornographic content). Moreover, market-focused content can attract local users and arouse their participation interests as users receive and get involved in updating local news and fun topics published by people who live in the same city or country. Also, TikTok recommends content based on local tastes. For example, Korean and Japanese users are more interested in cool dancers and cute girls, Indian users tend to prefer amazing acrobatics, and European users are likely to present fitness techniques and extreme sports. TikTok obtains higher stickiness and encourages enthusiasm for video creation by classifying users according to different markets. Furthermore, TikTok utilizes localized content to
specifically attract local stars and online celebrities (e.g., Kinoshita Yukina in Japan), recruit local employees, and open advertisement auctions. TikTok encourages and incubates local people to produce localized content because the cultural influence is deeply rooted in local communities. For the same reason, local employees responsible for local operation and content review are recruited. Therefore, TikTok goes viral in the local market and profits through advertisement auctions by integrating local content producers and local employees.

Organizing local theme challenges is another way to localize and stimulate interactions in local communities. TikTok local operators tailor suitable challenges for local users after examining the local culture rather than simply transfer content or specific theme challenges across different markets. For example, TikTok launches cultural-related challenges in different markets: the painting anime theme challenges were very popular in the Japanese market but motivational, educational, and health-related challenges are currently popular in India.

3.3.3 Value-Creation and Capturing Mechanisms

With revenues of about 176.9 million USD in 2019 (excluding non-iOS Chinese revenue) and 247.6 million all-time revenue, TikTok has not yet matured in terms of monetization as it still experiments with various models (Business of Apps, 2020). Although not yet implemented, there is great potential for an online purchase function such as that which its sister app, Douyin, uses. A reason why it is not yet fully monetized might be that the majority of current users of TikTok are teenagers. Also, according to the explanation of Andrew Lipsman, the eMarketer principal analyst, social shopping isn’t really taking off in America yet but is engrained in Asia (Weissman, 2019). However, there is great potential for an in-app purchase function since the young demographic of TikTok is not on Facebook and, thus, not accessible through Google toolkits. This makes TikTok a whole new channel for brands to access young
people. Besides, the cross-border e-commerce sellers from emerging markets (e.g., AliExpress) currently are cooperating with TikTok to gain followers and attract purchases.

TikTok is experimenting with various other ways to gain revenues. Hollister, a brand from developed markets, is reportedly cooperating with TikTok to test adding a ‘shop now’ button which will transfer users into an online shop site inside the app (Alcantara & Sutton, 2019). In addition to direct online purchase as a means of monetization, ByteDance currently has the beta version of TikTok Ads as a specialized advertisement service provider to enable firms or brands to launch campaigns and promotions on TikTok. For example, Too Faced, a UK beauty brand favored by young people, obtained 1.3 million clicks to the product page and earned an 18.38% CTR that exceeds the UK market benchmark. In addition, firms are encouraged to launch hashtag challenges with other influencers to promote brand-related videos.

It seems the way for TikTok to win mature users and expand profit channels is to copy the achievement of Douyin, though they are different apps from the same company. Compared with TikTok, Douyin is able to provide value-added videos at a maximum of 5 minutes and allows the co-existence of user generated content (UGC) and multi-channel network (MCN) models for enriching the variety of video content. Many professional short video production firms are now dedicated to generating interesting content for users by analyzing their performance in terms of dance, music, or even dressing. Specialized business teams are responsible for writing a dialogue script and preparing costumes and props, just like directing a mini movie. Users are able to acquire useful information from the app, for example, information about coronavirus and news from the local community. Furthermore, Douyin enables users to directly purchase products or services from the video or even live broadcast visiting stores in a city or hotel rooms. The huge internet traffic owned by Douyin can be
monetized through selling advertisement opportunities, profit from the commission of online private interaction between key influencers with the fans, and live selling.

3.4 Conclusion

Through business model innovation, companies in transforming economies can successfully internationalize as ByteDance has done with the TikTok app. Creative combination of elements of indigenous business models with elements from successful global businesses allows organizations from transforming economies to create unique value. Organizations can leverage their domestic base to experiment with new business model features that can then be implemented in their internationalization efforts. That is, firms in transition economies are co-evolving with their changing national environment (Volberda et al., 2017). ByteDance used the domestic IT strengths supported by national policies to develop an algorithm that, as a non-location bound resource, is the foundation of its international success. Therefore, as ByteDance showed, transforming economies can provide a good arena for firms to develop innovation business models.
CHAPTER 4

REVISITING THE INTERNATIONALIZATION PERFORMANCE RELATIONSHIP IN THE DIGITAL AGE WITH ALGORITHM SUPPORT: A STUDY OF THE INTERNATIONALIZATION OF MOBILE APPS

ABSTRACT

Compared to physical products, digital products such as applications (apps) can penetrate foreign markets with lower marginal and distribution costs, enjoying nearly instant global accessibility. This paper employs machine learning methods and leverages the parametric advantages of traditional regression for hypothesis testing to explore the impact of international diversification on the global performance of digital products. Our study is based on a dataset comprising 117,535 apps available on the Google Play Store, covering the publication period from 2005 to 2020. Additionally, we present a conceptual framework that outlines a systematic approach to integrating insights derived from both human knowledge and machine learning algorithms.

**Keywords:** machine learning algorithm; apps; digital products; Google Play Store; international diversification
CHAPTER 5

USING MACHINE LEARNING TO ORGANIZE INTER-THEORY BATTLES: THE EXAMPLE OF JAPANESE MNES’ FDI MODES

ABSTRACT

To refine theory-based hypotheses in international business, we conducted an inter-theory comparison using machine learning techniques, specifically employing interpretable machine learning (IML) metrics. Our aim is to address the tendency of international business (IB) theories to evolve in isolation, without rigorous cross-theory examination and a heavy reliance on self-referencing. Our research incorporated data from 62 variables related to the foreign direct investment (FDI) modes of 2,124 Japanese multinational enterprises. We analyzed an extensive dataset comprising 96,803 subsidiary-year observations from 2008 to 2017, covering FDI activities in over 70 countries worldwide. Our analysis identified and evaluated the prevailing theories concerning FDI modes, highlighting both the ‘winners’ and ‘losers’. Additionally, we uncovered variables previously overlooked in research that merit further exploration in future studies.

Keywords: interpretable machine learning; foreign direct investment mode; inter-theory battle; Japanese multinational enterprises
CHAPTER 6

DISCUSSION AND CONCLUSION

6.1 Introduction

In the contemporary capitalist world, globalization fosters economic and cultural connection and communication across the world and thrives on innovation, digitalization, and the internationalization of MNEs (Antra et al., 2023; Awate et al., 2015; Hoskisson et al., 2013). Digital technologies enable rapid information exchange and business model innovation (Ma & Hu, 2021; Mihalache & Volberda, 2021). Emerging markets, with their rapid economic growth, offer extensive opportunities for FDI, market expansion, and knowledge acquisition, reshaping the global economic landscape (Gaur et al., 2018). MNEs, increasingly influenced by factors such as advanced knowledge, capital input, and foreign entry strategies, play a pivotal role in amplifying globalization (Baldwin & Evenett, 2020; Bonadio et al., 2021; Rugman & Verbeke, 2004). Meanwhile, globalization trends also intensify global competition, even prompting discussions on de-globalization in response to the rise of emerging economies (e.g., China), geopolitical disputes, technological advancements, and evolving consumer preferences (Antra et al., 2023; Brakman et al., 2021; Ghemawat, 2011).

Thus, in light of recent developments in the global business environment, specifically rapid digitalization and the increased internationalization of organizations from the East, there is a need to better understand the motives for and factors underlying internationalization under modern capitalism. This dissertation aimed to reveal the multifaceted nature of firm internationalization in terms of knowledge intensity, MNE operations (e.g., at Chinese MNEs), digitalization trends, and foreign market entry strategies. To this end, I conducted four studies...
that explored (i) knowledge management processes at MNEs (Chapter 2), (ii) strategies for the successful global expansion of digital organizations (Chapter 3), (iii) approaches to the internationalization of digital products through global platforms (Chapter 4), and (iv) foreign entry mode choices (Chapter 5).

6.2 Findings of the Dissertation

This dissertation has yielded several important findings (Table 20). The overarching finding across all studies is that internationalization is promoted by innovation capability, competitive advantage, and the development of an international knowledge base through continual globalization. It is influenced by strategic assets, advanced knowledge resource-seeking motives, persistence in business models and technological innovation, and the accumulation of experience with globalization. To develop this general insight, the studies in this dissertation presented the following important findings.

Chapter 2 proposes that the knowledge management journeys of Chinese MNEs have unfolded in three distinct phases: (1) the MNEs primarily concentrate on their home country, intertwining inward FDI with knowledge management. (2) Chinese MNEs pivot toward overseas markets, integrating outward FDI with knowledge management to expand their global footprint. (3) The MNEs strategically focus on global innovation centers, aiming to integrate and create knowledge under the influence of government initiatives. Moreover, by leveraging this global knowledge base, Chinese MNEs, particularly state-owned enterprises (SOEs), have bolstered their global competitiveness and achieved internationalization. This evolution has been marked by a shift in innovativeness from reliance on global knowledge sources to a robust emphasis on self-creation.
Table 20. Main findings of this dissertation

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Main Finding</th>
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<tbody>
<tr>
<td>Two</td>
<td>Knowledge across borders: A systematic review of research on knowledge management among the Chinese multinational enterprises toward a conceptual framework</td>
<td>• Driven by government influence, Chinese MNEs transition through three phases of knowledge management: a domestic focus, overseas expansion, and global innovation targeting. This evolution, especially among SOEs, elevates global competitiveness through a shift from external knowledge reliance to internal innovation.</td>
</tr>
<tr>
<td>Three</td>
<td>Business model innovation and experimentation in transforming economies: ByteDance and TikTok</td>
<td>• Chinese organizations (e.g., ByteDance) have attained global recognition, exemplified by TikTok’s success, especially in the digital era. Several key factors underpin TikTok’s achievements: innovative business model strategies, the use of unique AI algorithms, and a steadfast commitment to ongoing experimentation in value creation and capture mechanisms.</td>
</tr>
<tr>
<td>Four</td>
<td>Revisiting the internationalization performance relationship in the digital age with algorithm support: A study of the internationalization of mobile apps</td>
<td>• International diversification substantially enhances the chance of an app being in the high-download category. • The positive impact of international diversification on app download performance is significantly increased by localization efforts. • Apps newly introduced to the market experience a more pronounced benefit from international diversification in terms of download performance.</td>
</tr>
<tr>
<td>Five</td>
<td>Using machine learning to organize inter-theory battles: The example of Japanese MNEs’ FDI modes</td>
<td>• Theoretical competition: network theory is most influential in explaining MNEs’ foreign entry, especially ownership degree. Institutional theory is better for illuminating contingency variables. • Temporal effects should be crucial for ownership degree, with variations for total assets and financial performance. • SHAP can be applied for quick exploration of non-linear relationships in management research.</td>
</tr>
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</table>
Chapter 3 found that Chinese organizations, exemplified by ByteDance and the success of the TikTok app, can achieve global prominence, particularly in the digital age. Moreover, it identified several factors that have contributed to TikTok’s success: (1) business model innovation achieved through the strategic recombination of elements from various other businesses; (2) leveraging of technological assets, notably a unique AI algorithm; and (3) a commitment to continuous experimentation with value creation and capture mechanisms.

Assisted by ML, Chapter 4 reached three key findings: (1) an increase in international diversification can significantly raise the likelihood of an app being widely downloaded. (2) App designers’ localization efforts play a crucial moderating role in the relationship between international diversification and app download performance, exerting a positive influence. The relationship between international diversification and app download performance is more robust for apps with a high degree of localization than for those with a low degree. (3) The newer the app on the market, the more pronounced the positive effect of international diversification on its download performance.

In Chapter 5, I used ML to coordinate an analytical comparison of various theories’ explanatory efficacy (Starbuck, 2016; van Witteloostuijn, 2020). Network theory emerged as the most useful framework for elucidating the foreign entry modes of MNEs, particularly regarding ownership degree. Institutional theory proved to be better suited to shedding light on contingent variables. Furthermore, temporal effects play a pivotal role in shaping degrees of ownership. This dynamic differs from the scenario observed for total assets (in which the t-2 period is more influential than the t-1 period) and financial performance (the t-1 period is more influential than the t-2 period). Lastly, I suggested the application of SHAP to expeditiously investigate non-linear relationships in the field of management research.
6.3 Theoretical Contributions of the Dissertation

6.3.1 Building Global Competitiveness Through Knowledge Management

The combined discussions of Chapters 2, 3, and 4 make an important contribution to the knowledge management literature. Previous research on knowledge management practices (e.g., Mei & Zhang, 2022; Zhou et al., 2017) was predominantly based on KIFs from advanced/Western countries and may not fully apply to KIFs from emerging countries (e.g., China), especially in this digital era. With respect to Chinese KIFs, governmental policies (e.g., “Birthing In and Going Out”) play a pivotal role in shaping knowledge management activities, and a unique logic is implemented in which domestic resources are aligned with knowledge acquired from abroad (Li et al., 2021). Thus, as we explore the intricate knowledge management journeys of Chinese KIFs, it is imperative to tailor existing insights to their unique context, given the influence of state policies and the associated logic of resource alignment.

Initially, Chinese KIFs tend to focus on domestic knowledge acquisition through FDI. Specifically, before addressing the governmental initiation of global knowledge-seeking in overseas markets, Chinese KIFs first accumulate valuable resources (e.g., initial global experience, increased production capability, and financial capital) through cooperation with foreign MNEs in the domestic market. They later shifted to overseas markets, integrating outward FDI with knowledge management. The integration of outward FDI with knowledge management becomes paramount, facilitating the expansion of their global footprint. In the second phase, Chinese KIFs mainly focus on knowledge acquisition and reverse knowledge transfer from overseas markets. With the help of the Chinese government’s impact and institutional advantages (e.g., strong financial support for Chinese SOEs), Chinese KIFs actively facilitate building and maintaining network ties (including political ties). The third
phase sees a strategic focus on global innovation centers that leverages governmental initiatives and institutional advantages. The integration and creation of knowledge are shaped by the influence of government initiatives (i.e., self-innovation-encouraging policies), and this evolution is particularly pronounced among Chinese SOEs.

In addition, this dissertation contributes to our understanding of how Chinese KIFs accumulate, integrate, and use advanced knowledge resources to enhance their global competitiveness. This is because they also experience negative/unfavorable effects of the global political environment due to Sino–US competition. The transformation observed during this journey is characterized by a shift in innovativeness—from a reliance on global knowledge sources to a robust emphasis on self-creation.

By leveraging the global knowledge base, Chinese MNEs have successfully bolstered their global competitiveness and achieved significant levels of internationalization. In the digital age, Chinese KIFs build global competitiveness through business model innovation based on the use of advanced technology (e.g., AI). For example, in Chapter 3, I discussed the success of ByteDance and TikTok. Positioned as a live-streaming social networking service with a primary focus on music sharing, TikTok enables users to create short dances, lip-sync performances, comedy sketches, and talent displays (Schwedel, 2018). According to Sensor Tower data, TikTok has emerged as one of the most popular apps globally (Chapple, 2020). For digital KIFs, such as TikTok, the domestic market plays a crucial role, as it can serve as a testing ground for innovative business models. Chinese digital giants can leverage their technological assets and unique home-market conditions to build firm-specific advantages that they can leverage abroad, as TikTok did by developing a proprietary AI algorithm based on both domestic and global users. That is, we find that business model innovation to keep pace with market conditions allows digital KIFs to become globally competitive. By emphasizing
business model innovation as a dynamic blend of imitation and originality, this dissertation underscores the potential for shaping new avenues of value creation in accordance with the overarching themes of the knowledge management journey of Chinese KIFs.

Moreover, the findings in Chapter 4 suggest that KIFs need to carefully consider their international footprints, as it can affect their global performance. In particular, I found that there are important nonlinearities to be considered when deciding which markets to compete in. Specifically, for digital products, my findings suggest that the strongest performance is achieved through either global releases or a focused approach to a small number of markets rather than situations in which products are released in a moderate number of countries. This finding reconciles previous contradictory insights that argued for either stepwise internationalization (Vahlne & Johanson, 2017) or global releases (Brouthers et al., 2016) by showing that both can be successful. In this way, the dissertation enriches our understanding of KIFs’ strategies in the digital realm and contributes to the broader context of KIFs’ knowledge management practices.

6.3.2 Illuminating the Internationalization Process

This dissertation contributes to international business research, especially research on the internationalization of KIFs, by showcasing the modes of foreign expansion exhibited by digital firms and traditional MNEs. The classical internationalization frameworks, such as the Uppsala model (Johanson & Vahlne, 1977), propose that MNEs’ internationalization should adopt a step-wise approach to minimize risks. Therefore, MNEs should prioritize lower-equity shares when they lack experience but opt for higher equity shares in foreign subsidiaries as they gain experience with a developed resource stock (Delios & Beamish, 1999). Moreover, with the aid of ML algorithms, I have shown that network theory (Rugman & Verbeke, 2001)
stands out as the most influential tool for explaining the foreign entry strategy of MNEs, particularly regarding ownership degree.

MNEs operate within networks that encompass relationships orchestrated by subsidiaries and institutions (Rugman et al., 2011). However, in the digital era, the classical internationalization strategy, according to which KIF firms would incrementally expand to foreign markets, may only apply in some cases (e.g., app producers) because of the difference between digital and physical products. Specifically, digital products can be distributed globally at a low cost (Shaheer et al., 2020), which allows firms’ rapid and cost-effective global expansion. Moreover, digital platforms (e.g., Google Play and iOS Store) enable instant global access to any digital products (e.g., apps) with minimal internationalization experience. For example, on the Google Play Store, product owners can simply select countries as destination markets by clicking on the web page before publishing apps on the platform, making them instantly available.

Complementing the existing insights on product internationalization with ML (Shaheer & Li, 2020), I observed a non-linear phenomenon akin to Porter’s stuck-in-the-middle argument but pertaining to the degree of international diversification. There is no linear relationship between global reach and digital products’ performance. Furthermore, easily downloadable digital products (such as high-performance apps) are available either in a larger number of markets (e.g., 170 countries) or a limited number of markets (e.g., 4 countries), rather than a moderate number of countries.

Specifically, in the latter case, I discovered three strategies for promoting popular apps: (i) App producers can tailor digital products to a specific region (e.g., a streaming TV app, Zattoo, is only available to users registered in Germany). Thus, I confirmed that the traditional regionalization strategy still applies in the digital era. (ii) Digital KIFs might provide
services/products for users far away who share a common language and even a similar culture—for example, LinksInd made an app for users in India, Sri Lanka, and Malaysia. (iii) Markets (e.g., those in the UK, the USA, and Germany) with a solid economic status or cultural impact can enable digital KIFs to apply incremental regionalization or even instant globalization strategies (born global) once they validate the app’s suitability. The evidence also indicates that some digital KIFs consider global market entry only after they acquire a large base of customers in their home markets (Shaheer & Li, 2020). For example, ByteDance launched its global app, TikTok, after they achieved domestic success in the Chinese market with Douyin, TikTok’s Chinese twin (Ma & Hu, 2021). Thus, I propose a distinction between the issues of market entry and market penetration in the internationalization of digital products. Digital firms should consider both issues when devising strategies to leverage global (or regional) reach. That is, digital KIFs should pay more attention to convincing global users to adopt digital products rather than considering the extent of global reach when evaluating the success of internationalization.

### 6.3.3 Business Model Innovation and Localization Strategies of Digital Firms

Previous research has emphasized the importance of the internet and cyberspace over physical distance (Cairncross, 1997) and proposed the “death of distance” and “the end of geography.” Contrarily, this study suggests that the global success of digital products can still rely on localization in foreign markets, consistent with Buckley and Ghauri’s claim (2004) that national borders are returning to the internet. In the first place, laws, rules, and tax regulations are determined based on the old geographical (or national) approach, so location is still a search parameter for digital services. Furthermore, firms’ digital offerings may still possess imprints of cultural, intellectual, and aesthetic elements from the originating nation (Amit & Zott, 2001; Boudreau, 2012). These differences are mirrored on the user end, as there are
significant national-level differences in, for example, the development level of digital infrastructures and users’ preferences. Finally, foreign digital products always confront additional costs because of the barriers to foreign companies created locally through the interaction of economic, cultural, political, and social elements (Granovetter, 1985; Zaheer & Mosakowski, 1997).

Thus, I propose that the localization strategy can reduce the liability of foreignness, which is still relevant in the digital era, to power the successful internationalization of digital products. Specifically, a digital KIF, such as ByteDance, can leverage its unique AI algorithms to generate short video recommendations for each user based on their personal preferences and app usage history. It can cope with regulations and censorship systems (for example, prohibition of alcohol, violence, and obscene content) in different countries while integrating locally generated content and distributing it to users with similar personae and usage preferences; for example, European users may be more attracted by fitness skills and extreme sports (Ma & Hu, 2021).

The findings of this dissertation suggest that digital KIFs should leverage the localization strategy beyond the bare minimum product offerings—for example, by simply adjusting user languages for different countries. Instead, localization would work well in tandem with a high degree of international diversification. Digital KIFs can access or accumulate a larger global user base in a short period through effective business model innovation (Volberda et al., 2017) by integrating essential functions of other successful business models (such as Instagram, Facebook, and YouTube). Furthermore, localization can creatively recombine and market various elements, which could be traced to other apps, to users in a friendlier way. For example, ByteDance incorporates components from social networking and video-sharing platforms, presenting a fresh approach to generating value for
consumers (Ma & Hu, 2021). Furthermore, ByteDance used its domestic market as an experimental laboratory to test segments of its business model before introducing them globally. This approach exemplifies how digital KIFs can develop innovative business models while incorporating popular local content by combining elements from successful models with the rapid testing of new features in their home markets.

6.4 Managerial Implications

This thesis has several important managerial implications. First and foremost, based on the findings of Chapters 3 and 4, I encourage digital KIFs to consider the destinations of their products at the beginning of the internationalization process. Specifically, globalization strategies should be tailored to the targeted user group while taking into account national and cultural differences. (i) Digital KIFs aiming to become born-global firms are encouraged to launch their products in most global markets instantly after validating the apps’ suitability. Furthermore, digital KIFs can use their home markets as a testing ground for products and new business model features, especially at digital firms from transitional economies that are co-evolving with the changing national environment (Volberda et al., 2018). Moreover, digital KIFs from developed economies can benefit if the home market serves as a lead market with high regional or global cultural and economic influence (Chen et al., 2019). KIFs can leverage local advantages for the internationalization of their technologies by strategically interacting with local users in lead markets that exhibit either high within-country demand heterogeneity or preference overlaps with several other countries (Shaheer et al., 2020). (ii) Digital KIFs targeting users from countries that share similar cultures and languages, even across large geographical distances (e.g., users from Brazil and Portugal), should root their products in a particular type of culture and a specific primary language rather than relying on broadly
accepted norms or cultural customs (e.g., America’s Hollywood-based pop culture) and a common global language (e.g., standard English) just to please potential users on a broader scope. For digital products, there is a distinction between the issues of market entry and market penetration; thus, digital firms must consider both when designing associated strategies for local and global reach.

Second, the findings of Chapters 3 and 4 indicate that digital firms (e.g., KIFs) should pay attention to the newness of their products, which is the most important factor in successful internationalization and the acquisition of a large user base. When the degree of newness increases, it yields diminishing returns, represented by a reversed S shape. That is, if the newly launched app is adopted by users, after a certain period, the download rate will dramatically decrease. Thus, the product’s owners should leverage the short period after the initial product launch. For example, they should make their apps in numerous markets rather than just a few in the early stages of the app’s lifetime and then begin focusing on specific markets. I encourage digital firms to build and sustain strong connections with apps with high centrality (e.g., TikTok is the flagship app on its platform) by leveraging shared digital resources (e.g., SDKs). However, small digital firms should be aware of the potential pitfall of high costs and inefficiencies in resource selection and coordination. Therefore, they should strategically “coordinate” across various platforms and judiciously incorporate suitable resources in accordance with the requirements of resource providers (West & Wood, 2008).

Third, the findings of Chapters 2 and 5 of this dissertation suggest that managers of knowledge-intensive MNEs should focus on governmental influence when considering strategies for foreign entry. For many decades, the Chinese government has leveraged its influence to support firms in “emergent and crucial” industries seeking internationalization, especially through resource allocation and encouraging policies (Chen & Li, 2019; Zhao, 2019).
2012). Chinese MNEs, especially KIFs, face interventions from host countries, particularly Western governments, in the contemporary international climate due to the large-scale M&A deals initiated by Chinese firms in the high-tech industry (Deng, 2012; Zámorský et al., 2023). Additionally, by studying the internationalization of Japanese MNEs, I found that the most influential entry strategy is captured in network theory, which views MNEs as networks of subsidiaries embedded in various relationships, for example, subsidiaries and governments of host countries (Birkinshaw & Pedersen, 2009; Rugman & Verbeke, 2001; Rugman et al., 2011). Thus, it might be valuable for Chinese knowledge intensive MNEs to participate in foreign investment networks, actively join alliances, and co-own subsidiaries with MNEs from other nations. Furthermore, they can enable their associated foreign subsidiaries to collaborate with local and global firms in the host countries rather than seeking full ownership and direct control from the Chinese headquarters.

6.5 Limitations and Future Research

While this thesis makes noteworthy contributions, there are also opportunities for improvement and advancement, particularly from the methodological and theoretical standpoints. The following sections delve into the overarching limitations of the thesis and highlight prospects for future research, acknowledging that the previous chapters extensively specified the limitations specific to the individual studies.

This thesis set out to study the internationalization of firms in the modern capitalized world as well as strategies for entering foreign markets. I recommend that future research further investigate the high dimensionality of firms while including the effects of changes in the proposed determinants over time. In Chapter 4, I collected data only within one time period for cross-sectional analysis. This implicitly assumes stable model parameters across
firms and over time, which are frequently employed in strategic management but may not fully reflect the dynamic nature of theoretical constructs (Bowen & Wiersema, 1999). Moreover, inadequate parameter variability can result in biased parameter estimates, leading to incorrect inferences in the realm of strategic management (Pant & Starbuck, 1990). While a longitudinal research design would be ideal, the concepts measured in Chapter 4 would require massive data collection for each firm (or app producer). This would be costly, both in terms of time and finances. Consequently, I have carefully and continuously collected data. I believe that a longitudinal research design could provide more confidence in Chapter 4’s project of establishing causal links between internationalization and the global performance of digital firms.

Chapter 5 yielded insights into MNEs’ foreign entry mode choices with an additional consideration of the time lag effect, which captures the temporal dimension with high dimensionality. Specifically, I observed that the temporal effect of the total assets of MNEs (where the t-2 period is influential) exhibits differences compared to financial performance (when the t-1 period is influential). Still, I did not proceed to investigate the potential relationship between individual predictors and ownership degree, specifically regarding the time-lag effect. Thus, I recommend that future research explore this issue by incorporating longitudinal data into research designs.

Furthermore, I discussed internationalization and global performance in Chapter 4 about digital firms on a global scale. In Chapter 5, I examined theoretical explanatory power by focusing on MNEs from traditional industries (e.g., automobile production). However, I realized that it could be an important research avenue to consider global firms that focus on digital (cyberspace) and traditional industries (physical space) to examine whether and how IB theories in physical space function after being verified in cyberspace (and vice versa). This is
important because many firms seek digital transformations or combine digital technologies into their existing business models. Specifically, researchers could consider using Chapters 4 and 5 of this dissertation as a starting point to inspect further (i) the individual effects between degrees of foreign partnership and ownership regarding entry mode choices and subsidiaries’ control. Digital firms need to consider the influence of localization (e.g., cultural aspects derived from physical space) and the influence of dominated platforms, such as the Google Play Store and iOS. (ii) The most powerful framework identified in Chapter 5 was network theory, which was applied to understand Japanese MNEs’ entry modes; however, it is also frequently discussed in IB research on digital firms (e.g., Nambisan et al., 2019; Shaheer & Li, 2020). Still, this model could be further investigated if it is the most influential among all mainstream IB theories, and researchers could evaluate whether other theories function better. For example, organizational learning theory sees the experiences of foreign operations and global entry as valuable knowledge resources. At the same time, digital firms can easily launch and operate in new markets in a low-cost and rapid manner. Therefore, knowing how digital firms or KIFs could benefit from traditional wisdom would be valuable. (iii) Lastly, I will further suggest exploring how MNEs in both the digital and non-digital sectors cope with the challenges of digital transformation. Particularly how leaders from non-digital MNEs respond to the challenges posed by digitalization. This would include a discussion of privacy concerns in applying digital techniques and an analysis of how leadership and organizational structures can adapt to rapid technological breakthroughs (e.g., large language models). Given that employees can be closely monitored and regulated through machine learning algorithms and biometric recognition technologies (e.g., facial and motion recognition), addressing the ethical implications and management strategies associated with these practices is crucial. (iv) Further, I urge a closer examination of concerns in utilizing machine learning techniques (as
one of the crucial digital technologies) in IB research. Because it is often criticized as a "black box" due to the lack of transparency and complexity in interpreting ML results. However, employing interpretable machine learning techniques can mitigate these issues by producing more transparent and understandable results. For example, feature importance ranking can rank variables based on their contribution to the algorithm’s predictive accuracy, making the outcomes more interpretable.
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SUMMARY

In this modern capitalistic world, globalization facilitates economic and cultural connectivity, driven by innovation, digitalization, and the internationalization of multinational enterprises (MNEs). Digital technologies enable rapid information exchange and business model innovation. Emerging markets, characterized by economic growth, provide substantial opportunities for foreign direct investment, market expansion, and knowledge acquisition, reshaping the global economy. MNEs, influenced by advanced knowledge, capital input, and foreign entry strategies, significantly enhance globalization. However, globalization also intensifies global competition and opens discussions on the impact of emerging economies, geopolitical disputes, technological advancements, and changing consumer preferences. Therefore, I conducted four empirical studies (from Chapters 2 to 5) to explore the complex nature of firm internationalization.

As China aims to become an innovation-driven economy, research on the knowledge management of Chinese MNEs has surged over the past 15 years. Chapter 2 develops a conceptual framework highlighting key factors in knowledge management, organized into six topical clusters and three evolutionary phases. Drawing from 150 articles in top business and management journals, I synthesize and integrate these insights. Additionally, I identify future research avenues, including shifting from knowledge exploitation to exploration and examining knowledge management trends in the digital era.

Chapter 3 examines the global success of TikTok, developed by ByteDance, attributing its achievement to business model innovation strategies. TikTok successfully integrates aspects of various social networking and video-sharing platforms, offering a unique customer experience. Additionally, ByteDance leverages its extensive and diverse domestic market to test and refine TikTok’s core technologies before expanding internationally.
Digital products like apps can enter foreign markets with lower marginal and distribution costs, enjoying nearly instant global accessibility. Chapter 4 uses machine learning and traditional regression to examine the impact of international diversification on digital products' global performance. This study analyzes 117,535 apps from the Google Play Store, spanning 2005 to 2020. It also presents a conceptual framework that integrates insights from human knowledge and machine learning algorithms.

Chapter 5 utilized machine learning techniques, specifically interpretable machine learning metrics, to compare various theories in international business. The aim was to address the issue of theories evolving independently without sufficient cross-theory analysis and relying heavily on self-references. Analyzing 62 variables related to the FDI strategies of 2,124 Japanese multinational companies, the study examined a large dataset of 96,803 observations across subsidiary activities from 2008 to 2017 in over 70 countries. This study identified key theories concerning FDI modes, highlighting both successful and unsuccessful strategies, and revealed previously overlooked variables for potential future exploration in research.

This dissertation contributes to the field of internationalization by emphasizing innovation capability, competitive advantage, and the development of an international knowledge base through continual globalization. It is influenced by strategic assets, advanced knowledge resource-seeking motives, persistence in business models and technological innovation, and the accumulation of experience with globalization. Additionally, the dissertation offers several interesting future research avenues to advance international business research.
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谢谢爸爸妈妈在这么多年的时间里对我的支持，鼓励和帮助。不论是什么样的时候，不论什么样的事情，我都可以毫无后顾之忧的把大后方交给你们，让我可以勇往直前，儿子感到很幸运能有这样的父母。我想和妈妈说，不论是小的时候您告诉我要努力学习还是后来的坚定的支持我的各种决定，我都特别想说我很感谢您，我爱您，妈妈。我想和爸爸说，虽然您比较沉默，但我知道您一直都在默默的支持帮助和鼓励我，让我能扬帆远航，我爱
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