Relevant knowledge and recipient ownership: Chinese MNCS' knowledge transfer in Africa

Journal Item

RELEVANT KNOWLEDGE AND RECIPIENT OWNERSHIP:

CHINESE MNCS' KNOWLEDGE TRANSFER IN AFRICA

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Abstract

This paper examines emerging market multinational corporations' (EMNCs') knowledge transfer (KT) in emerging markets using case studies of Chinese MNCs (CMNCs) in Africa. CMNCs are found to transfer "relevant knowledge", existing knowledge reconfigured so that recipients can apply it more effectively with less effort in the new context. Relevance is ensured through recipients exerting ownership of the KT process, influencing what knowledge is transferred and how it is transferred. We summarize EMNCs' KT process in a "relevant knowledge recipient ownership model". The model contributes to KT theory by refining and empirically testing a new type of knowledge - relevant knowledge - and a new transfer model - recipient ownership - associated with EMNCs. It leads to a "relevance-based view" in which EMNCs' competitive advantage in emerging markets is significantly enhanced by knowledge relevance rather than superiority. This contributes to a better understanding of EMNCs' competitiveness in emerging markets as created from distinct characteristics of their relevant knowledge (applicability, assimilability, affordability) and recipient-driven transfer (selection, scrutiny and synthesis).

Key words

relevant knowledge, recipient ownership, knowledge transfer, emerging market multinational corporation (EMNC), China, Africa

1. Introduction

This paper addresses the under-researched topic of knowledge transfer (KT) by emerging market multinational corporations (EMNCs) in emerging markets. Emerging economies have, mostly through the operations of EMNCs, become significant outward investors, accounting for 35 per cent of global foreign direct investment (FDI) outflows in 2014, up from just 13 per cent in 2007 (UNCTAD, 2015, p. 5). Many EMNCs, especially Chinese MNCs (CMNCs) are investing heavily in low-income emerging countries including those in Africa - targeting sectors most in need of development, including infrastructure, in ways that promote South-South investment flows (UNCTAD, 2015). Until now, the knowledge management of MNCs' moving into and out of emerging markets has been neglected in both KT and international business (IB) research (Lahiri, 2011; Peng et al., 2010). MNC engagement in Africa, in particular, remains "under-researched in the fields of management, organization studies, human resources and international business" (Kamoche, 2011, p. 1).

The way EMNCs internationalize to compete in the global arena has been a focus of recent IB research (Aulakh & Kotabe, 2008; Kundu & Merchant, 2008; Lahiri, 2011; Contractor et al., 2007; Hoskisson et al., 2013; Luo & Tung, 2007; Luo & Child, 2015). However, studies to date have largely focused on why and how EMNCs strategically *acquire* knowledge that they lack (Mathews, 2002; Luo & Tung, 2007; Rui & Yip, 2008), not on their *transfer* of knowledge that they have acquired or created. To account for EMNCs' increasing ability to compete in foreign markets when lacking firm-specific assets, IB analyses associated with the resource-based view (RBV) and knowledge-based view (KBV) of firm growth generally argue that EMNCs assemble and manage externally-acquired strategic assets (Rui & Yip, 2008; Chittoor et al., 2009).

These approaches, mainly adapted from studies of developed-country MNCs (DMNCs), may be appropriate for understanding how EMNCs defended themselves when DMNCs entered their home markets, and how they were initially able to use cost advantages to enter DMNCs' home markets, where they acquired new knowledge. They are, however, inadequate to explain the recent strong and sustained expansion of EMNCs' outward investment and their growing role as suppliers of knowledge to emerging markets. Recent IB research has argued that EMNCs can achieve advantage in emerging markets through combining ordinary resources based on their more detailed familiarity with special requirements, resource restrictions and institutional limitations in the host country (e.g. Cuervo-Cazurra & Genc, 2008; Luo & Rui, 2009). At their present early stage, however, these claims lack detailed insight into the processes of EMNCs' creating and transferring knowledge to other emerging markets, and have yet to receive much empirical assessment. Little has been reported about how EMNCs manage the simultaneous acquisition of knowledge in high-income markets and transfer of knowledge to low-income emerging markets; how they fill the "gap" between knowledge acquired and knowledge required; or, above all, what EMNCs' knowledge is and how they transfer the knowledge to overseas and make advantage from it.

KT theory has also paid little attention to EMNCs as knowledge providers, its focus remaining on DMNCs as possessors of superior knowledge and best practice (Edwards & Ferner, 2004) that enable their expansion abroad. DMNCs' KT to emerging markets was long defined as "forward diffusion" (Edwards, 1998), in which they act as "teachers" instilling knowledge into learners who lack it (Noorderhaven & Harzing, 2009). This one-way characterisation of KT is less obviously appropriate to emerging markets, since knowledge that is valuable to the source (the provider) requires more adaptation to the needs of the recipient before it can be useful to them (Liyanage et al., 2009, Zahra & George 2002).

Technologies used in high-income markets have often proved to be inappropriate when transferred to lower-income countries, as they make excessive demands on local infrastructure, capital or skills supply (Schumacher, 1973; Kamoche, 2000).

KT is particularly important in the context of emerging markets because they tend to have limited availability of management and technical skills (Delios & Bjorkman, 2000; Shrestha et al., 2008), and the accumulation of these skills is a key determinant of economic growth (OECD, 2013). In sub-Saharan Africa, whose population is projected to rise from 970 million in 2013 to over 2 billion by 2050 (Population Reference Bureau, 2013), 42.7 per cent of had an income of less than $1.90 per day in 2012 at 2011 Purchasing Power Parity (World Bank, 2015). While FDI by MNCs is an important channel for the transfer of new technologies and materials, production methods, and organizational and managerial skills (Dunning & Lundan, 2008), it is frequently reported that knowledge transferred by inward investor has been ineffective in Africa and other emerging markets (Jackson, 2004, 2012; Kamoche, 2011). The main reasons include the emerging-market recipients' limited absorptive capacity (Cavusgil et al., 2013) and DMNCs' lack of understanding of their very different economic and institutional conditions (Hofstede, 2007). Competing within emerging markets and internationalizing out of these markets require strategic choices that are markedly different from those prescribed in traditional models of MNC behavior (Aulakh & Kotabe, 2008; Kundu & Merchant, 2008; Contractor et al., 2007; Hoskisson et al., 2013; Luo & Tung, 2007). In Africa, varying colonial patterns have added to an already wide diversity arising from geographical, historical, economic and social–political contexts (Kamoche, 2000, 2011).

This paper tackles the shortfalls in both IB and KT research streams by addressing two research questions. Firstly, *what kind of knowledge have EMNCs transferred to emerging markets*? Secondly, *how do EMNCs transfer knowledge to emerging markets*? Our research found that CMCNs achieve competitive advantage by transferring what we term "relevant

knowledge", through a form of interaction that we characterise as "recipient ownership". The resultant "relevant knowledge recipient ownership model" contributes to KT theory by describing and explaining the new type of knowledge and its distinct form of transfer associated with EMNCs.

This paper is organised as follows. Section 2 reviews existing literature relevant to EMNCs' knowledge transfer and sets up our research questions. Section 3 explains our research design. Section 4 presents findings on what knowledge CMNCs was transferred to Africa, how this knowledge was transferred, and how CMNCs achieve competitive advantage from their KT. Finally, Section 5 discusses the main characteristics of EMNCs' relevant knowledge and recipient ownership. We do this by distilling the findings into propositions whose generality can be tested in future research.

2. Literature review

Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information (Davenport & Prusak, 1998, p. 5). It comprises information, technology, know-how, and skills (Grant, 1996a, p. 377). Knowledge transfer (KT) is the systematically organized exchange of information and skills between people or business units. It involves providers actively communicating to others what they know, and/or recipients actively consulting others in order to learn (Liyanage et al., 2009).

Conventional KT theory, while recognising that provider, recipient, nature of knowledge and transfer mechanism are all important for transfer (Gupta & Govindarajan, 2000; Polanyi, 1966; Cohen & Levinthal, 1990), still views the provider's knowledge base as central to success. The knowledge transferred by DMNCs is often described as "superior knowledge" or "best practice" (e.g. Martin & Beaumont, 1998; Edwards & Ferner, 2004), and the possession of superior knowledge is viewed as central to their success in new markets

(Hymer, 1976; Kogut & Zander, 2003). "Superior knowledge" is generated close to the frontiers of research, delivers the highest labour- and multi-factor productivity and is demanded by the most advanced customers (Andrews et al., 2015), and so arises first in the countries that lead the world economy. It is usually assumed to be advanced and cutting-edge technology or management practice, transferred from developed to emerging economies largely within MNCs (Bartlett & Ghoshal, 1989). DMNCs are widely held to have dominated global competition owing to their superior knowledge (Dunning & Lundan, 2008).

The "forward diffusion" model (Edwards, 1998) depicts the DMNC provider's superior knowledge as giving them authority to decide what knowledge is transferred and to control the transfer process. This is particularly the case in DMNCs pursuing a global strategy (Bartlett & Ghoshal, 1989). Although DMNCs may modify their transferred knowledge to some extent in response to client or host-country need, recipient involvement is not usually a strategic intent for DMNCs (Yang et al., 2008). They instead adopt a teaching-learning model, featuring a linear transfer flow from units that are relatively knowledge-rich to units that are relatively knowledge-poor (Noorderhaven & Harzing, 2009).

However, the advanced nature of DMNCs' knowledge does not always allow successful KT in emerging markets (e.g. Dunning & Lundan, 2008; Zhang & Edwards, 2007). The transfer can be impeded or blocked when the provider's knowledge is of a level and type that recipients cannot readily absorb, leaving a "technological gap" between the provider and local firms (Kokko, 1994). If the transferred knowledge is too far ahead of that of domestic firms, effectiveness is compromised by recipients' reduced ability to assimilate the knowledge (Kokko, 1994) or operationalise it (Grieve, 2004). While established KT theory suggests that recipients should improve their ability to absorb knowledge from DMNCs (Cohen & Levinthal, 1990; Gupta & Govindarajan, 2000), and so improve the

effectiveness of forward diffusion, it has paid less attention to changes in the linear transfer model that improve the receipt of MNC knowledge.

Evidence that the linear model does insufficient justice to the inherently social nature of the KT process (Noorderhaven & Harzing, 2009) has encouraged the development of social learning theory, which accentuates the situated and contextual nature of knowledge and learning (Fox, 2000). Research on organizational learning in MNCs also suggests that KT is essentially a social and interactive process rooted in spatial and relational proximity (Lam, 2003; Porter, 1998). These re-appraisals have turned attention to the dynamics of interaction between home-based institutions and host country context. Interaction between provider and recipient enables them to "transform" knowledge so that recipients find it useful and are motivated to acquire it (Nonaka & Tageuchi, 1995; Zahra & George 2002); "translate" specialist knowledge into non-specialist terms accessible to those with a smaller or different knowledge base (Thorpe et al., 2011); "codify" knowledge so that recipients understand its formal basis and can still apply and re-transmit it in the absence of the provider (Kotlarsky et al., 2014); or re-assessment by providers when preparing knowledge for transfer (Baert, 2005).

Building on these insights, a few researchers (e.g. Schulz, 2003; Yang, et.al, 2008) have moved beyond the conventional KT focus on providers' possession of superior knowledge and linear transfer, and started to assess the importance of knowledge *relevance* to its transfer. Schulz (2003, p. 442-3) defines knowledge relevance as "the degree to which external knowledge has the potential to connect to local knowledge", this potential depending on the extent to which external knowledge "has new implications for prior local knowledge". While radically different and superior knowledge might appear to have the most implications for recipients, its lack of connection can restrict recipients' capacity to absorb, apply and integrate it with their existing knowledge. Schulz (2003) likens the combination of relevant

new knowledge with existing knowledge to a "lock and key", producing transfers that enable wider and more effective application of what the recipient already knows, as well as adding new knowledge in readily usable form.

The motivation for transferring knowledge increases with its relevance to users, since this raises the return on recipients' investment in knowledge acquisition and (by ensuring that recipients are receptive to it and gain from it) the return on providers' investment in knowledge transfer (Grant, 1996a). Schulz (2003, p. 454-5) finds the relevance and transferability of knowledge to be significantly determined by (1) the degree to which knowledge is "codified" and can be transferred by formal instruction; (2) the quality of informal relations between knowledge provider and recipient; and (3) the extent of two-way knowledge flow, through which recipients help providers to learn as well as learning from them. Conversely, the effectiveness of knowledge transfer is not significantly related to the volume of knowledge held by either the provider or the recipient.

These discoveries imply that superiority of knowledge may inhibit rather than enhance KT, whose success relies instead on the way that knowledge and its mode of transfer are adapted for relevance to a new context. They also suggest that EMNCs may be able to operate successfully in emerging markets, despite lack of superior knowledge, because of a smaller gap between their home and host country conditions, and greater success in bridging that gap. This is in contrast to analyses built on the RBV, which emphasizes possession of superior strategic resources as a necessary condition for the firm's competitive advantage (Wernerfelt, 1984; Barney, 1991) and the KBV (Kogut & Zander, 1992; Grant, 1996b) which identifies superior knowledge as an especially important resource. Both theories lead to a characterization of EMNCs as disadvantaged by a lack of strategic resources. EMNCs are portrayed as limited in their ability to transfer knowledge (Gullien & Garcia-Canal, 2009),

underdeveloped in their management capabilities and decision-making processes (Lyles & Baird, 1994) and in greater need of legitimacy (Hitt et al., 2000).

To the extent that EMNCs are found to competing in foreign markets without strategic resources, the RBV and KBV usually explain this by the way they assemble and manage externally-acquired assets, obtained ultimately from DMNCs which they ally with (Mathews, 2002), imitate (Chittoor et al., 2009), or directly acquire (Rui & Yip, 2008). This approach can account for the way EMNCs first responded to the arrival of DMNCs in their domestic markets and entered some North American and European markets, mainly through acquisition (Rui & Yip, 2008). However, the RBV/KBV approach is less easily applied to those EMNCs that have recently stepped up their involvement in emerging markets and become major investors there (UNCTAD, 2015). Some EMNCs have become important suppliers of knowledge to emerging markets while simultaneously acquiring knowledge in high-income markets, making their KT as important as their knowledge acquisition and integral to their overall knowledge management strategy.

Recent IB research has argued that EMNCs can achieve advantage in emerging markets through combining ordinary resources based on their more detailed familiarity with special requirements, resource restrictions and institutional limitations in emerging markets (e.g. Cuervo-Cazurra & Genc, 2008; Luo & Rui, 2009). The "composition-based view" (CBV) (Luo & Child, 2015) advances IB research by explaining why some EMNCs might succeed in global markets while lacking strategic resources. The CBV argues that EMNCs can identify, leverage and combine ordinary resources (external and internal) to create a competitive advantage. This extends the KBV, finding potential advantage in a firm's "combinative capability to synthesize and apply current and acquired knowledge" (Kogut & Zander, 1992, p. 384). It also builds on the "absorptive capacity" perspective, which emphasizes a firm's ability to value, assimilate and apply new knowledge to gain and sustain a competitive

advantage (Cohen & Levinthal, 1990; Zahra & George, 2002). While the KBV and absorptive capacity approaches focus on knowledge as a special resource, the CBV focuses on the combination of ordinary resources, whose integration can provide a superior competitive offering even if none is individually unusual (Luo & Child, 2015). The CBV highlights the possibility that EMNCs' management and adaptation of knowledge during transfer, especially to emerging markets, may be a source of "compositional" advantage attained without superior knowledge.

Little has been done to test these implications, however, due to neglect of EMNCs as knowledge providers (with few exceptions, e.g. Zhang et al., 2008; Chang et al., 2009). The expanding number and international engagement of EMNCs gives a chance to investigate two research questions. Firstly, what kind of knowledge have EMNCs transferred to emerging markets? Secondly, how do EMNCs transfer knowledge to emerging markets?

3. Research design

3.1 Case selection

Chinese MNCs (CMNCs) in Africa's infrastructure sector were selected as case-studies. Africa's lack of infrastructure has been a serious obstacle to its economic development. Three decades ago, China faced comparable challenges in infrastructure. Today China's has been visibly transformed while Africa's has not (Foster & Briceño-Garmendia, 2010), despite Africa receiving proportionally more foreign aid (Easterly, 2006). It has been argued that China's main benefit from foreign aid was the influx of new ideas, the opening of its mindset and the dissemination of knowledge (NDRC, 2009). China also acquired rich knowledge by taking ownership of the knowledge transfer from international organisations, identifying what it needed to learn and the best international donors and investors to fulfil these needs (China DAC Study Group, 2011). China's infrastructure improvements and

methods of learning from DMNCs are aspects of its experience that many African countries are keen to copy (China DAC Study Group, 2011).

Against this backdrop, China has since 2000 become the largest international financer and constructor of infrastructure in Africa (MOC, 2013; Schiere & Rugamba, 2011). While the potential host-country benefits of Chinese-financed and implemented projects has been recognised (Foster, 2009), concern has been expressed over what knowledge has been transferred and its potential impact (Kamoche & Siebers, 2015; Banks et al., 2013). A cluster of African countries including Sudan, Kenya, Ethiopia, Tanzania, Nigeria and Angola have experienced average annual GDP growth rates of 5 to 10 per cent since 2000, an expansion that has been promoted by, and is generating more demand for, infrastructure development (UNCTAD, 2015). These fast growing economies have together received no less than 70 per cent of China's finance for Africa's infrastructure (Foster, 2009; Foster & Briceño-Garmendia, 2010). However, they vary considerably in their development stage, governance quality, resource endowment, society and culture. CMNCs engaged in African infrastructure development are therefore an appropriate focus for assessing what knowledge CMNCs have been transferring to Africa and how the knowledge has been transferred.

3.2 Data collection

The data in this paper were mainly selected from the first author's large ongoing project entitled "China's outward investment and Chinese MNCs". Running since 2005, this project deploys a multiple case study methodology on Chinese firms operating around the world in all industries. Over 100 case studies have been conducted to date. For this paper we use the data collected from 19 Chinese MNCs which carried out infrastructure projects in Africa between 2008 and 2015. More than 80 per cent of the Chinese firms in Africa are state owned enterprises (SOEs) (Alden, 2007). Reflecting this, our case-studied CMNCs in infrastructure were predominantly SOEs, with just two of the 19 cases (C16, C18) privately

owned. Basic background information on the case companies and interviewees is given in Table 1. As the primary information source, the first author interviewed 85 people involved in African infrastructure development. Tables 2-5 summarise the main interview questions and responses.

Table 1 is about here.

Data for each case were collected from documentation, fieldwork observations and interviews. We firstly reviewed the existing literature and openly accessible materials to better understand infrastructure development in Africa. We also assembled archival data stored by international and national organisations in Africa and China including the World Bank, OECD, Ministry of Commerce (MOC) of China and China Exim Bank. During the fieldwork and interviews, we collected annual reports, market analysis, project management reports and publications of relevant industrial associations, our documentation materials running to more than 3,000 pages.

Extensive efforts were made to ensure impartial, comparative and comprehensive data. Interviewees were guaranteed anonymity, and assured that the research was solely for academic use. As shown in Table 1, we included interviewees from both Chinese and African sides, and from international organisations. Interviews with the Chinese participants focused on their perspective on CMNCs' knowledge transfer. On the African side, the interviews focused on the local perspective on CMNCs' knowledge characteristics and the strategy and capability for enhancing knowledge transfer from CMNCs to local recipients, including domestic firms, individuals and government organisations. Case studies and interview questions were designed to permit comparison between CMNCs and DMNCs in the same country and sector. CMNC respondents were asked to compare their company's knowledge characteristics to those of the DMNCs also operating in the country. We obtained comparative perspectives from officers of international organizations (such as the African

Union) and host governments, project owners and others with experience both of CMNC and DMNC projects. Where possible, we also interviewed managers of DMNCs in the same host country.

Data were collected between 2008 and 2015, a period which saw significant changes in strategy both of knowledge providers and recipients. For example, in 2008 it was rare to find either CMNCs or host governments with a specific knowledge transfer arrangement. In 2013 and 2014, countries like Tanzania and Ethiopia were working more actively to compel CMNC knowledge transfer, with dedicated government departments, detailed plans and practical transfer schemes. CMNCs had grown more receptive to the need for KT, to enhance corporate reputation and competitive advantage. The time-interval of data collection has therefore benefited the study, showing the evolution of CMNC knowledge transfer processes. Closer analysis of these changes shows a consistent trajectory towards the "recipient ownership" model we identify.

3.3 Data analysis

The case study methodology described in Yin (2008) and Eisenhardt (1989) was used to analyze the knowledge transfer involved in the case studied infrastructure projects. We applied data reduction techniques (Miles & Huberman, 1984) guided by the two research questions, to identify the features of knowledge and its transfer mode that appeared recurrently. This identified the factors of greatest relevance to the content, features, mechanisms and impacts of knowledge transfer. We then compared and contrasted the factors in each case, and mapped out the common knowledge contents, characteristics and transfer mechanisms. The findings have been summarised to populate the model developed, showing the interactions between variables and moderators. To ensure reliability and validity in the data analysis and findings, double coders from IB and KT backgrounds carried out the analysis independently. We checked for research effects, triangulated from different sources

and coders, weighted the evidence, made contrasts and comparisons, used extreme cases, checked out rival explanations, looked for negative evidence and obtained feedback from previous interviewees. Follow-up interviews were used to ensure that interviewees agreed our description of CMNCs' knowledge and its transfer features. Finally, we compared and contrasted the case study results with existing theoretical arguments (reviewed above), which predominantly feature DMNCs' superior knowledge and the forward diffusion transfer model. Inductive analysis of the data enabled us to refine the emergent "relevant knowledge recipient ownership model" described in section 5.1.

4. Findings: knowledge transfer of Chinese MNCs in Africa

This section first presents selected cases of CMNCs in sub-Saharan Africa to provide some contextual information about their knowledge transfer in 4.1. It then addresses the two research questions respectively in 4.2 and 4.3, assessing what knowledge CMNCs transferred to Africa in terms of its category, origin and characteristics, and how the knowledge was transferred in terms of methods and transmission channels. The distinctive process and outcome of this KT are associated with an effectiveness that identifies it as a source of competitive advantage for CMNCs, through ways that are outlined in 4.4.

4.1 Case studies

Five companies (coded C9, C14, C16, C3 and C4) can serve to illustrate the variety of contexts in which the research questions were investigated. While they entered sub-Saharan Africa at different times with contrasting motivations and projects, all required a substantial transfer of knowledge to their African operations.

C9 was an example of a CMNC offering a technically low-end solution at lower price (than available from DMNCs) to meet the host country's immediate demand for electricity, although it was simultaneously offering high-end solutions on many projects elsewhere in the world. In 2008 C9 won a US$175 million build-operate-transfer (BOT) project in Sudan by

offering a package including a low interest loan from China's Exim Bank, design from a Chinese institute, power equipment from a top domestic firm (which had acquired technology from DMNCs including GE and ABB), and a top Chinese construction firm. The British supervisor hired by the project owner (IV84) criticised the Chinese for designing such small and outdated power plants for Sudan, arguing that this wasted resources and that Chinese lenders should stop financing them. He also voiced doubts about quality, pointing out where equipment did not fit due to design problems. Confronted with these criticisms, the site manager (IV20) admitted that the design and manufacturing technologies of CMNCs were "not good enough", but stated that "the British supervisor should be aware of the limitation on Sudan's capacity to build large power plants set by shortage of capital, level of demand and lack of a compatible electricity network". When this was cross-checked, the Chinese commercial counsellor in Sudan (IV63) observed that, "The power was cut off more than twenty times a day even in the capital. It would be nice for the general public to be able to access electricity as the first step". Sudan's foreign minister confirmed to us that, "By 2008 Sudan had a foreign debt of US$27 billion [which was over $700 per capita]. With the limited funds we have, Chinese firms are more able to meet our demand by offering quick planning and financing and construction" (IV82). Other interviewees recalled that Sudan had previously commissioned Western firms to build environment friendly gas-fired power stations which ran at higher cost because the gas had to be imported. The newly built small plants could use heavy oil produced in Sudan, which polluted more than gas but saved significant amounts of scarce foreign exchange (IV63).

C14 was an example of a CMNC offering the host country newly imported wind power technology from Europe, and the managerial know-how to install and run it. Despite rich wind sources and shortage of electricity, Ethiopia had made limited investment in wind power due to lack of funding and technology – commissioning only one previous project, by

a French company. C14's wind power design capacity improved considerably after 2000, when Chinese firms begun acquiring the latest technology from Europe. During the learning process many Chinese firms like C14 "modified European wind power technology by finding alternative material and methods, and taking advantage of China's lower manufacturing cost and faster delivery" (IV85). Today, "half of the world's ten largest wind power equipment makers are Chinese, and they can produce most of the components except the axle-tree. Turbine blades made in China is much cheaper than Europe's" (IV30). Like C7, C14 was able to win the African project by offering a package the hosts described as "attractive": a low-interest loan of US$117 million from Exim Bank, C14's design, access to China's 20 best blade suppliers, and a competitive construction team (IV30). The head of the Chinese subsidiary (C14 IV30) recalled:

> "Before our first phase project, a French company had signed a wind power contract with Ethiopia. We started our project one year after they did, but completed one year earlier. Although their technology was better, their management was poor. For example, they did not realize until the construction began that they were unable to transport the fan blades to the north due to their being no available road. They had to construct a new road for the transportation. In addition, they lacked a work ethic. They kept taking a break while we worked overtime."

The Ethiopian government perceived that C14 had the practical knowledge to solve the host country's specific problems. Asked what he meant by "practical" knowledge, the officer in Ethiopia's Ministry of Water and Energy (IV79) explained that it was "knowledge that is not only less expensive but also more compatible with the general conditions of the host country, such as the lack of a sophisticated industrial supply chain for the most advanced technology and the lack of experience to apply scientific management systems". Hence, the host government was determined to acquire full knowledge of the design, building and maintenance, for future independent operation (IV79). Extremely detailed knowledge transfer schemes were put in place.

C16 is one of the few leading CMNCs mainly relying on independent R&D rather than forming joint ventures with DMNCs, but their important influence is still acknowledged (Ren, 2006). By 2014 C16 was selling to 46 of the top 50 international carriers in telecommunications, but it remained cost-competitive in developing countries including almost all of Africa. In 2004 when it entered Cameroon, the country's telecoms were dominated by France's the MTA Orange, and suppliers Eriksson and Alcatel. "We asked ourselves, with what strategy can we have a market position? Our answer was that, we must become the Toyota of the telecoms industry - we do not aim for the best technology but the most practical technology. For example, we researched and produced generators using solar power because Africa is short of energy but rich in solar resources" (IV38). C16's offer of lower cost, customised products, won it only two contracts in Africa between 2004 and 2009: "It was difficult as the existing DMNCs own 90% of the market… In order to convince the potential customers that our technology is good enough for what they required, we not only provided them with detailed data on what we have done in the past, but also brought many of them to China and elsewhere to visit our completed high performing, lower cost projects" (IV38).

C3 and **C4** used Chinese technical standards and know-how on using local alternative resources to meet the host-country need for rapid delivery and affordable cost in rail construction. As a landlocked country, Ethiopia must currently rely for all imports and exports on one major road from Addis Ababa to the port of neighbouring Djibouti, with journeys taking 2-3 days. The proposed railway would reduce the journey time to 6 hours, making it a priority project, for which China's Exim Bank offered a low-interest loan of US$3 billion. C3 and C4 constructed half each. The senior railway officer in Ethiopia Railway Corporation (ERC) explained why CMNCs were chosen (IV80): "Our government spent years consulting worldwide experts and visiting railway sites in different countries. We

eventually chose Chinese technology and standards, not only because China provided loans to us, but also because the project will cost less and be delivered quicker, which we really value. … They also train our employees". The importance of comprehensive knowledge transfer was emphasised in his statement that "We have a big plan to build a regional and sub-regional railway network of over 5000 kilometres by 2020. Value for money is most important. Also, this is the first project. We have a detailed knowledge transfer plan so that we learn everything from this and then rely less on foreigners for other railways" (IV80).

C3's project manager (IV8) reported: "Most pieces of equipment were transported from China as they were not available locally. But whatever exists locally, we use that". The country's high unemployment rate made local recruitment a priority. C3 used 8,521 local employees alongside 1,000 Chinese to construct 333 km of railway from Addis Ababa to Dawanle. C4 used 6,000 local alongside 800 Chinese to construct 370 km from Dawanle to Djibouti (C3 IV6, 7, 8; C4 IV9). At one site of C3 and C4's project, we observed the local employees manufacturing rail tracks and piers, with one Chinese employee acting as trainer and supervisor at 5-meter intervals. When local employees had difficulties, the Chinese employee went ahead to demonstrate what to do. C3's project manager (IV8) noted that "Local employees do not know how to stir cement or bond steel properly, which will affect the quality of rail tracks and piers. We asked the Chinese employees to demonstrate to skillful local employees first, and then the skillful ones will show the rest of the employees" (IV8)". Local employees also learnt Chinese management methods, such as paying bonuses for hard workers and better performers and punishing latecomers. Rewarded employees were held up as role models, and photos associated their achievement displayed in a window near the main gate. Many of the local employees had reportedly become skilled in building houses or repairing machines, making them "highly employable for other jobs in society" (IV7, 8).

4.2 What knowledge did CMNCs transfer to Africa?

These cases shed light on the categories, origin and nature of knowledge transferred to Africa by CMNCs.

Types of knowledge transferred

African local-context constraints recurrently cited by interviewees included the high unmet demand for infrastructure, severe shortage of finance, lower level of industrialisation limiting indigenous supply chains, limited supply of skilled labour despite a large, cheap general labour force, and inefficient institutions and bureaucracy (IV80,81,82,83). "This is the national situation [*guo qing*] in Africa: do more with less" (IV63, 68).

Correspondingly, the knowledge transferred by CMNCs was commonly targeted to meet the immediate needs and demands of the host countries, within the limits of local conditions and strained budgets. CMNCs consistently transferred four categories of knowledge highly valued by local recipients:

Technology: it is usually acquired from DMNCs and modified to the less-developed country context, termed "applied technology" by C16's CEO. He claimed that C16 "has not had one single original product invention" and achieved its competitive advantages by "improving and integrating the functions and features of products invented by Western companies" (Ren, 2006, p.1). The key feature of applied technology is that it avoids incorporating all the available features to maximise output quality and labour productivity, but in so doing becomes easier or less expensive for developing countries to install and use. For example, C14 redesigned key components of European wind power technology to make construction and operation feasible in the Ethiopian context. C16 customised its telecoms network stations to use locally available resources and reduce operating cost.

Financing knowledge: In all cases, CMNCs transferred knowledge of how to raise and manage project finance. Supplier credit (mostly from Exim Bank) was extended as part of a package, shaped by the CMNC borrower in light of host-country capability and need. The

procedure was typically described this way: “we search for potential projects. We talk to project owners about our idea of financing and execution. If the project owner agrees, we report to government department, which will prepare loan documentation and submit to China Exim Bank. The Bank will request materials from us which we submit. After that the Bank initiates its internal risk management assessment system. If the assessment is fine, the Ministry of Finance will sign agreement with the Bank” (IV3). Host-country project owners value this aspect of CMNCs’ knowledge because project finance has long been a bottleneck in their infrastructure programmes.

Managerial know-how: it includes identifying alternative resources and methods to meet the needs of the project, and understanding its adaptation to local conditions. Along with new knowledge, CMNCs transferred the skills to modify existing methods or work processes to ensure that the new knowledge could be understood given the hosts’ existing knowledge base and applied given the constraints of local conditions. For example, C14 predicted the difficult local conditions for project implementation, its advance preparations helping it to complete the project faster than the French MNC. C9 scaled down its power plants to fit the locally restricted supply of capital and natural resources.

Global market knowledge: CMNCs invariably brought up-to-date knowledge of international markets and supply chains and access routes to it. The scale of global migration of manufacturing to China has made it an information centre on the demand and supply of goods and services for emerging markets. The typical CMNC attitude is that, “whatever required in this market, I am almost always certain that in which location the cheapest or suitable stuff exist. The logistics company do the rest as long as I place the order” (IV20, 34, 14). Showing how this could be operationalized, C14 used 20 domestic firms to supply fan blades so that the host country was able to select the most appropriate quality and cost.

Origins of transferred knowledge

The 19 case-study CMNCs acquired most of their knowledge from the home market, where they had worked with and learnt from DMNCs operating in China. Table 2 shows the most common answer for "how did you acquire the current knowledge?" is "learning from operations in China", while there are also large contributions from "direct learning from DMNCs in China" and "indirect learning from DMNCs in China". This study confirms an already-documented view (China DRC Study Group, 2011) that Chinese firms have adopted a "selective" and "ownership" learning approach when learning from DMNCs. That is, they chose what knowledge to acquire and controlled the learning process, based on their appraisal of local needs and conditions. For example, C14 acquired European wind power project knowledge, but adapted it to cheaper fan blades designed and made in China.

Table 2 is about here.

Characteristics of transferred knowledge

The knowledge transferred by our case-study CMNCs was very different from that of DMNCs. Firstly, local interviewees often depicted the knowledge transferred by CMNCs as "not cutting edge but more practical and contextually specific" (IV71, 72, 73, 74, 75, 76, 80). They acknowledged that the technology involved in projects financed or conducted by CMNCs was often not the most advanced one available in global market. The gap between the CMNC and DMNC knowledge was widely acknowledged by the Chinese interviewees: "Compared to DMNCs, we lag behind in key technology and equipment. For the equipment used in our projects, 80% were from China, 20% key equipment from the west. Our design lags far behind. Two bottlenecks are language and standard" (IV18).

However, these cases also made it clear that the gap between the knowledge transferred by CMNCs and the most advanced available knowledge was often a deliberate choice, to ensure that local needs were met within the confines of host-country conditions (such as the small power plants in Sudan and the railway standard in Ethiopia). Adaption was

largely done for the purpose of reducing cost through an acceptable sacrifice of material or service quality and increased use of local labour, which also promoted local job creation. For example, Ethiopia cannot afford to hire foreign companies (DMNCs or EMNCs) to implement all the planned railway projects, so must ensure that the early projects give it the technical and managerial knowledge to run future ones largely on its own. This need for effective and low-cost knowledge transfer shapes the choice of technology, steering it towards one that is fit-for-purpose, easily acquired and compatible with the present infrastructure and skills base.

Finally, CMNCs' knowledge was presented in ways which promoted the recipients' understanding and unassisted application. While this initially involved demonstration and "tacit" transfer in some tasks, it usually later entailed the more explicit presentation of knowledge in forms that recipients could "decompose", record and analyse (IV71,75,80). African recipients were attracted by the recognition that much CMNC knowledge has been obtained and applied during China's rapid recent development, confirming its effectiveness (IV80). Inviting African policy makers and managers to visit Chinese projects, while often motivated by the need to persuade them that appropriate knowledge and standards were being transferred, also helped to reinforce the transfer by giving recipients more direct exposure to knowledge and practices that CMNCs had recently derived from DMNC partners and competitors (IV81, 82, 83), an example of 'inpatriate' knowledge exchange whose effectiveness has been demonstrated (Reiche, 2011).

4.3 How did CMNCs transfer their knowledge?

African recipients' awareness of the characteristics of CMNCs' knowledge made them keen to acquire it, but also concerned that it might have a negative impact or might not be effectively transferred. "Having recently acquired much of their knowledge from DMNCs and modified this for its own needs, CMNCs incur noticeably lower cost in re-transferring

their 'know how' to Africa, whose countries are generally similar to many Chinese regions about three decades ago in terms of their development stage, conditions and challenges" (IV50). Recipients are, however, aware of the inferior quality of Chinese goods and projects supplied to Africa, compared to those available in higher-income countries. This led them to demand extensive interaction between the knowledge transferors and recipients in order to improve the transfer of tacit knowledge, and make more of it explicit. Host-country companies and governments were observed to seek a high degree of "ownership" so as to control the knowledge transfer.

Recipients' initiative

In 2008, the Exim Bank Africa chief (IV58) explained to the first author how they selected projects to support with lower interest loans in different African countries, stating: "No outsider knows a country better than the host government. Hence, it is wise to let the Africans choose the projects which suit the local demand and conditions best". His claim was validated by an Ethiopian government officer who described how he and his colleagues negotiated with the Chinese companies on what the technology that the Chinese should transfer (IV80):

> "Although this [finance for constructing the railway] is coming as a loan [from Exim Bank of China], we will be paying for it. We have to agree on terms and conditions and so on…with this one, even in some of the technical issues, we have to debate, sometimes disagree, break out, come back again for further discussion. It has taken about 6, 7 months because it's not a give and take".

Interviewees from recipient countries expressed how they felt about the difference between traditional and Chinese knowledge transferors in their transfer modality. One senior government officer in Ethiopia stated (IV79):

> "In the power sector, projects are mainly financed by the Chinese and Ethiopia and the knowledge transfer content can be negotiated. But if a project is financed by international organizations, the level

> of knowledge transfer is hindered by a relative inflexibility in negotiation. They have one policy for the entirety of Africa".

Another interviewee (IV80) confirmed that knowledge transfer is most effective when there is local initiative and implementation of a concrete strategy to make the most from the foreign cooperation:

> "For technology transfer you need to identify what available technology is. Then, you assess its level, whether it is best in the world, best in somewhere or best in some characteristics; then you go for identifying the gap [between the available technology and yours]; then you select the technology which you assume there is a gap, … then you have to study the alternatives: how could I adapt this available technology. … We are a latecomer; we have to make advantage of the latecomer. I don't need to go and dream to invent a wheel; I choose the best".

Guided by this detailed strategy, case-study CMNCs in Ethiopia all had obligations to transfer knowledge, as shown in the case of C3 and C4. We encountered similar government strategies on enhancing CMNCs' knowledge transfer to locals in Tanzania (IV71), Kenya (IV75), Nigeria (IV69) and Cameroon (IV76).

Recipients' scrutiny

African hosts exerted strong scrutiny and supervision over the transfer process. In the railway project in Ethiopia, where the Chinese standard had been introduced, the senior manager admitted that local people are "concerned about Chinese engineers' lack of experience. They even question the map we use. Indeed for Chinese standard, they have 'zero understanding' (*lin lijie*)" (IV9). The host government indeed adopted a more concrete strategy to ensure the Chinese transfer their best knowledge (IV79):

> "Yes, Ethiopia accepted Chinese standards on road, railway and wind power projects. The Chinese standard is there. What works in China should be fine with us. But the problem is, you cannot construct below that standard. Stick to that standard. If your standard to dig a tunnel is 3 meters, then you do 3 meters. … There is a general guideline [to scrutinize the Chinese project]".

The scrutiny would be impossible if recipients had no knowledge of what CMNCs had provided or would provide for them. Hence, formal training of local talents was the first step. The deputy head of C4's railway project noted the knowledge transfer obligations placed on it via formal training (C4 IV9):

> "Our ERC contract has one article dedicated to capacity building. We need to report the proportion of labour force we are using, from unskilled labour to engineers, from the number of Chinese employees to local employees. Moreover, ERC has a dedicated Capacity Building Department. … We are training 12 senior managers for ERC, all paid by us. Central and Southern China University provides distance education on railway management. In addition, Tianjin Railway Professional Technology College also offer training for Ethiopians, with 254 in the first batch. They were trained to become train drivers, maintenance workers, crew members etc".

However, formal training was far from sufficient. Under pressure to justify their use of modified technologies and practices, CMNCs entered a highly communicative, dialogical relationship with their African hosts even when cultural differences and tight timetables initially worked against this. The recipients often complained about the difficulty of understanding Chinese project management because "detailed documents to explain the project plan and process were not available, or the documents were in Chinese, which needed to be translated to English first and then the local language" (IV75,78,79,80). Almost all the interviewees, from CMNCs and host countries, observed that "the Chinese often know how to do but not how to teach" (IV11, 12). These reinforced the view and action of enhancing human interaction from both sides (IV79).

Scrutiny was executed mainly through human interaction in which CMNCs hired local managers and employees to work with them shoulder by shoulder. The subsidiary head (IV31) described clearly how the human interaction was arranged:

> "Ministry of Energy of Ethiopia dispatched a lecturer of Addis Ababa University to be our project consultant, who brought a small team to the project site. For every step of our operation, he asked us in

> detail what that step was and what the principle was behind that step. He then wrote down in detail into the handbook on the program of the operation, maintenance, principle, practice, and results verification. … If he was unable to understand, he would keep asking until he fully understood. Before that, he would not sign the 'acceptance' for us so that we were unable to proceed to next stage of the project, which severely delayed our progress".

Among the many mechanisms of human interaction we identified were visits to completed projects in China, participation of local supervisors in projects, site demonstrations to local employees, and other mechanisms shown in Table 3.

Table 3 is about here.

4.4 CMNCs' attainment of competitive advantage from KT in Africa

We have also found that CMNCs' reconfiguring knowledge, so that it can be readily absorbed by recipients and fits with what they already know, makes a significant contribution to their competitive advantage in Africa. The importance of transferring reconfigured knowledge, so that it can be readily absorbed by recipients and fits with what they already know, is repeatedly demonstrated in our interviewees' descriptions of the nature and characteristics of CMNC projects, and the way they drew on Africa's local knowledge as well as supplementing and sometimes replacing it. Our research suggests that, while DMNCs also engage intensively in knowledge transfer to Africa, CMNCs have developed greater capability for viewing production and project-management challenges from the emerging-market recipient's perspective, and making appropriate adjustments in the content and process of knowledge transfer. This is found to be closely related to the contrasts between DMNCs and CMNCs regarding the role as knowledge provider, corporate strategies and relational proximity to recipients.

In the role of knowledge provider, DMNCs have heavily invested in a transfer capability for advanced or superior knowledge that they originated or acquired from research and development in high-income countries. CMNCs are often simultaneously transferors of

knowledge (to emerging markets) and knowledge recipients (from DMNCs), reflecting their need to acquire already-invented technologies and associated skills before they could begin to develop their own. CMNCs have worked intensively with DMNCs within China since it began to open to trade and FDI in the 1980s, and then with local firms in host emerging markets since the early 2000s. As well as being more familiar with emerging market conditions, CMNCs are more alert to recipients' precise knowledge needs, and the importance of involving them actively in knowledge acquisition, because CMNCs' own recent learning from DMNCs has already required adaption of knowledge for closer fit with their own conditions (e.g. Warner, 2014). One subsidiary head (IV30) noted that, "During China's infrastructure development, Chinese firms also learnt from foreign firms. For example, there were 26 power generation units in the Three Gorges Dam. The Chinese government tied Dong Fang and HPEC with GE and Alsthom respectively to form a joint venture which made the first two units. Through this learning the Chinese firms made the other two units afterwards. We indeed understand the enthusiasm and need of Ethiopians for learning. We are also willing to teach them. We can do whatever is required such as training or even setting up a subject for their universities".

CMNCs are usually transferring knowledge in which they have few intellectual property rights, and which they have often recently codified themselves in the process of acquisition, so that they are easier to modify the knowledge further to meet the local requirement. Two senior managers of C17 explained why, in their company's view, only CMNCs can bring relevant knowledge to Africa: "First, China's market is massive and requires many firms to meet its demand. DMNC telecoms giants wanted to control it but failed. This enabled domestic firms to learn, to compete and to survive. Second, the market of a 1.3 billion population with high growth rate offered a natural experimental field for our technology. With trial and error, we improved. Third, China is so diverse and has many niche

markets, impelling us to develop customized products to meet local demand and conditions" (IV44, 45).

Regarding corporate strategy, DMNCs are almost invariably first movers, arriving with original and proprietary technologies. This has often allowed them to occupy the leading market position in emerging countries, without much adaptation to local need. DMNCs do hold much knowledge that is of value to low-income countries, and tend to find it cost-effective to modify their knowledge for the largest of these, where a strong internal market is expected to develop (Dunning & Lundan, 2008). However, our research shows that DMNCs' strategies tend still to be focused on advanced technology, which they find inherently hard to adapt to countries in earlier stages of industrialisation, as in Africa. C16 in Ethiopia noted: "Nokia-Siemens operated here. They did not maintain network stations. They considered Ethiopia was not their 'valuable market'. But for us, we do whatever to access the market" (IV43).

CMNCs have adopted a different strategy towards Africa due to their non-superior knowledge, and later arrival both in high-income and emerging markets. All of our 19 case study CMNCs took "base of pyramid" (BOP) countries or communities as their core market, even though many of them were also targeting developed country markets (and some such as C16 and C17 had advanced technology that made them top global players). CMNCs were aware that "the best recipients of China's knowledge are developing countries undergoing a similar development stage" (IV67). In more detail, "the Africans turn to the Chinese knowledge as it is reachable [due to the relatively smaller knowledge gap]; the Chinese knowledge flows to Africa as it is worth most in Africa. That is why the two have an instant 'click'" (IV67). In Cameroon, the long presence of French and other DMNCs could have put them in pole position for the privatization process that began in 1994. But as the planning minister (IV81) observed, "French companies … don't move their investment to our priority

sectors. That's why we need to think about a new partner ... China can become such a partner".

While DMNCs were able to offer better quality goods and services at a higher price, African hosts sought an affordable price with an acceptable sacrifice of quality, which CMNCs were best placed to offer. For example, C9's small power plants enabled host countries to build more plants than if the same sum were spent on more advanced plants, which were larger and more expensive. One CMNC subsidiary head explained: "While CMNCs improved their technology, learning from DMNCs and nationally imported technology and equipment in the 1980s and 1990s, DMNCs moved to a new stage targeting a higher margin by selling (1) intellectual property rights and design maps, (2) technical standards, (3) information and (4) technology platforms. Whoever guides the platform leads the industry. While such high-end solutions are controlled by DMNCs, what CMNCs can do is to choose the differentiation strategy, using our distinctive application capability to compete with them" (IV27).

Turning necessity into virtue, CMNCs have learnt to use their ability to reconfigure knowledge as a distinctive capability for winning business and attaining competitive advantage in Africa. Kogut and Zander (2003) show how tacit knowledge can embody firm-specific advantages that promote future expansion; our cases suggest that the ability to re-codify tacit knowledge, to speed up its transfer to clients or subsidiaries in very different contexts, is an equally important capability at least for firms arriving late in already-crowded markets. Table 4 shows that CMNCs have already created competitive advantage through their more successful knowledge transfer strategies in Africa.

Table 4 is about here.

CMNCs also take the advantage of relational proximity between China and Africa which is characterised by the similar development stage, being south-south partners, similar

institutional environment, without colonial history and the trust built since Chairman Mao's regime from 1950s (IV67). In the past two decades, the considerable increase of China's investment and official development assistance has challenged the West's hegemony in Africa, encouraging China to play a decisive part in shaping the future of the continent (IV81, 82).

5. Discussion and conclusion: a "relevant knowledge recipient ownership model"

This final section identifies EMNCs' KT in emerging markets as the "relevant knowledge recipient ownership model", outlining its distinctive content, generation and derived competitive advantage, and contrasting them with DMNCs' superior knowledge. In moving to conclusions about EMNCs in general, limitations must be acknowledged to generalizability of evidence on CMNCs. There may be characteristics specific to CMNCs – including their domestic market size, close financial and political relationships with government, and advantages of scale, financing and foreign market access arising from these – which contribute to competitive advantage in ways not open to all the EMNCs. On the other hand, other EMNCs may be able to learn from CMNCs' early experience, and may find it easier to establish conditions for relevance knowledge creation and recipient ownership, not least because they avoid various host-country suspicions concerning China, arising from its large size and need for cheap commodity supplies. The observation of relevant knowledge and recipient ownership in all our cases may imply that these are characteristics required for successful KT in emerging markets by any multinational, not just those from China. The extent to which CMNCs' experience can be generalised to other EMNCs is a question for future research. The seven propositions set out below to allow each element of our argument, derived from CMNC evidence, to be tested on EMNCs based in countries other than China.

5.1 A "relevant knowledge recipient ownership model"

Our research findings indicate that the relevance of knowledge significantly

influences the extent and effectiveness of EMNCs' KT in emerging markets. Relevance requires a bridgeable gap between provider's and recipient's existing knowledge: not so small as to deprive it of novelty, not so large as to make it incomprehensible to new users. We define relevant knowledge as the reconfiguration of existing knowledge to a new context, allowing recipients to generate more effect with less effort. Three recurrent characteristics of relevant knowledge were observed:

Applicability: Knowledge is selected for flexible and cost-effective operation so as to deliver the required performance improvement while taking account of local limitations, e.g. on supply of managerial and labour skills, infrastructure, energy, components, materials and finance. The transferred knowledge is moved away from cutting-edge technology and best management practice to align it with locally-specific demands and bring it closer to a recipient's knowledge base. This results in a modified version of the technologies and management practices invented in developed countries and transferred by DMNCs (Edwards & Ferner, 2004), and often involves "secondary innovation" devised or guided by recipients (von Hippel, 1994). Relevant knowledge conveys technology that is the most effective given the emerging-market recipients' present resource constraints – in contrast to technology that is most effective under the (less severe) resource constraints of the developed economies in which most proprietary technologies originate.

Assimilability: Narrowing the gap between existing and newly-arriving knowledge makes it easier to bridge: recipients can add to their current knowledge and capability without investing in significant new areas of learning, enabling them to act more effectively in their particular situation. A dialogue between recipient and provider, contrasting with the one-way flow of instruction from teacher to student, allows both to identify what new knowledge is needed and proceed quickly to its transfer. Codification, transformation and translation

(reviewed in section 2) are among the processes that promote assimilability, whose effectiveness relies on the "recipient ownership" outlined below. Applicability and assimilability ensure that new knowledge substantially improves on any that is locally available, without undermining local operators' power to manage and develop new commercial operations, and ultimately run and replicate them without external help.

Affordability: Acquisition and implementation of knowledge are brought within the recipient's limited financial means, partly as a consequence of greater relevance making it more applicable and assimilable than the superior knowledge from which relevant knowledge is derived. Keeping the costs of knowledge and its transfer within strict budget limits is especially important when (as in Africa) hosts must ultimately repay the loans from which most projects and equipment purchases are financed (Foster & Briceño-Garmendia, 2010). The affordability of knowledge is increased by improvements in applicability which increase its cost-effectiveness, and improvements in assimilability which reduce the cost of acquiring it, applying it and passing it on to others. Compared to superior knowledge, relevant knowledge entails lower costs of purchase, transfer, operation and expansion or replication, enabling recipients to "do more with less". We summarise the characteristics of the "3As" in Table 5, supported by interview sources.

Table 5 is about here.

The observation that successful emerging market KT involves reconfiguration of knowledge for relevance, achieved through these characteristics (the '3 As'), gives rise to our first and second propositions:

> *P1: EMNCs' transfer of knowledge in emerging markets depends on reconfiguring existing knowledge for relevance to the new context.*
>
> *P2: The greater relevance of EMNC knowledge, compared to that previously transferred to emerging markets by DMNCs, consists mainly in its greater applicability,*

assimilability and affordability.

The achievement of knowledge relevance is promoted by permitting "recipient ownership" of the transfer process. Recipients exert influence over what knowledge to transfer, how to transfer it and at what cost, forcing knowledge providers to adapt their acquired knowledge to local requirements. This turns EMNCs' KT in emerging markets into an interaction between knowledge provider and recipient, with both contributing to the adaptation of knowledge so that it can work in the local context. Recipient ownership was observed to have three recurrent characteristics:

Selection: Recipients are permitted to observe the knowledge held and applied by EMNCs, in China and other markets, and to identify the technologies, managerial techniques and know-how that are most relevant to them (e.g. African leaders visited established projects in China to ensure selection of the type of project and transfer model most appropriate to their countries). EMNCs are put under pressure to adapt their knowledge until it has sufficient relevance to ensure transferability. Recipients may also select the method of knowledge transfer to ensure effective learning at sufficiently low cost (as with Sudan's formation of a refinery joint venture which pressured the CMNC to complete KT to its local counterpart in 8 years).

Scrutiny: Recipients observe EMNC operations in the host country to ensure that relevant knowledge is being transferred as agreed, paying especially close attention to the methods of transfer so that knowledge can be retained and re-used in the absence of the provider. Hosts' demand for scrutiny was evident in constant interaction between corporate and government officials on-the-ground with EMNC workers and managers, even when these initially showed clear preference to proceed without continual inspection. We observed scrutiny following selection (as when Addis Ababa University faculties took on the role as project supervisor in the wind power project) and preceding selection (recipients observing

CMNCs' previous projects within China and in other countries to ensure that they could select from the full range of available knowledge).

Synthesis: Recipients take overall responsibility for combining newly-provided knowledge with what they already know, the success of this synthesis giving an immediate check on whether relevance is being attained. The new knowledge combinations yielded by this synthesis, and the KT experience that leads to it, lead to knowledge creation which benefits providers as well as recipients, strengthening EMNCs' incentive to submit to host-country selection and scrutiny.

These three components of recipient ownership (the "3 Ss") ensure that EMNCs adapt their knowledge to achieve relevance (characterised by the "3 As") in the emerging-market context. The adaptations of providers' knowledge achieved through recipient ownership are consistent with existing definitions of knowledge transformation, translation and codification (Nonaka & Tageuchi, 1995; Thorpe et al., 2011; Kotlarsky et al., 2014). But they highlight the greater importance, in the emerging market context, of recipients' participation in the transfer.

Providers' repeatedly-observed submission to recipients' requirements, allowing them to ensure these characteristics (the '3 Ss') in the KT process leads to our third and fourth propositions:

> *P3: EMNCs' KT in emerging markets depends on adopting a recipient ownership approach.*
>
> *P4: Recipient ownership of KT promotes the relevance of knowledge mainly by enabling recipients to practise selection, scrutiny and synthesis of providers' knowledge.*

Once established, the interaction between recipient ownership and knowledge relevance becomes mutually reinforcing. The recipient's selection of knowledge, scrutiny of knowledge transfer and synthesis of received knowledge promote the relevance of that knowledge, and greater relevance makes knowledge easier to select, scrutinise and synthesise. For example,

the Ethiopian railway company's selection of knowledge enabled it to check that it received a system whose technical effectiveness, managerial and labour skill requirements delivered the necessary performance within its budget, and whose knowledge arrived in a form that could later be replicated and re-transmitted without further EMNC or DMNC help. Interaction between provider and recipient, focused on what recipients currently know and need to know in order to make the project work, narrows the knowledge gap between the two - ensuring a choice of knowledge to transfer and mode of transfer that work to both sides' advantage. When recipients "own" the new knowledge, and are assured of future gains from its use, they are given more incentive for knowledge acquisition, which keeps down the provider's transfer cost. Exercise of ownership also helps recipients keep down the "cost of ownership" (acquisition and installation cost plus running cost); and it is this lower lifetime cost, ensured by knowledge relevance, that allows the EMNC to win and successfully implement the project. The mutual advantages derived from this transfer mode are summarised in our fifth proposition:

> *P5: Recipient ownership of KT promotes the provider's capacity to adapt knowledge for greater relevance, and the recipient's capacity and incentive to acquire the relevant knowledge.*

We also observed that recipient ownership in pursuit of relevant knowledge requires EMNCs to adopt a "knowledge mediation" role, in the dual sense of being an "intermediary" that channels knowledge derived from DMNCs to the recipient, and a "mediator" resolving differences between knowledge provider and recipient (Mariotti, 2011) using active contributions from both. The mediation role facilitates codification, as much EMNC knowledge has already been codified and clarified in the process of recently acquiring it. Under competitive pressure to acquire knowledge quickly (as latecomers), EMNCs have often selected it for relevance and reconfigured it for application in their home markets which simplifies emerging-market recipients' own tasks of scrutiny, selection and synthesis when

the EMNC makes an onward transfer to them. The ubiquity and importance of this mediation prompts our sixth proposition:

> *P6: EMNCs' adoption of a knowledge mediation role facilitates the reconfiguration of knowledge needed to ensure its relevance.*

The creation and transfer of relevant knowledge can give EMNCs a unique source of competitive advantage in emerging markets, as shown in the last section and Table 4. Competitive advantage can be attained, even against competitors with access to superior technology, through adaptations of existing knowledge that make it more relevant to the host country context. By closely matching recipient needs, relevant knowledge raises the chance of successful transfer, and can have follow-on benefits for providers (for example, when targeting projects or product at low-income segments within higher-income markets). This advantage is greatest when the EMNC has gained access to superior technology but reconfigures this for relevance to the host, through the adoption of a mediation role under recipient-owned transfer. EMNCs' deliberate use of knowledge relevance to win competitive advantage in emerging markets underpins what we call the "relevance-based view" of firm growth. It differs from the resource- and knowledge-based views, developed mainly from observation of DMNCs, under which firms achieve competitive advantage from exploiting strategic resource and/or superior knowledge. The evidence for this relevance-based view found in all our case-study observations and interviews leads to our seventh proposition:

> *P7: EMNCs derive competitive advantage in emerging markets from the transfer of knowledge reconfigured for relevance to the new context.*

We characterise the EMNCs' KT in emerging markets as following a "relevant knowledge recipient ownership transfer model", represented in Figure 1. The base of the triangle (the bold line with two-way arrows), which is the focus of this paper, indicates that EMNCs' relevant knowledge (P1) characterised by the 3As (P2) is created and transferred through recipient ownership (P3), involving the 3Ss (P4). The interaction between recipient ownership

and knowledge relevance becomes mutually reinforcing. The recipient's selection of knowledge, scrutiny of knowledge transfer and synthesis of received knowledge promote the relevance of that knowledge, and greater relevance makes knowledge easier to select, scrutinise and synthesise. Hence, recipient ownership of KT promotes the provider's capacity to adapt knowledge for greater relevance, and the recipient's capacity and incentive to acquire the relevant knowledge, enhancing relevant KT (P5). The provider takes on the task of knowledge mediation (P6), responding to demands conveyed by recipient ownership and problems that arise during the KT process. Competitive advantage (P7) results from these interactions and the successful KT to which they lead; so it is shown as an outcome of the relevant KT.

The two-way arrows emphasise that, although the direction of KT is from provider to recipient, companies and other organisations (and their employees) in the recipient or host country contribute substantially to the composition of knowledge that is transferred and to the design of the transfer process. Achievement of relevance requires emerging-market recipients to show the EMNC what they already know and what they need to know, prompting the EMNC to re-appraise its own knowledge so as to transfer what is most relevant. By producing knowledge whose relevance facilitates successful transfer, these interactions ensure a return on the provider's investment in supplying and reconfiguring knowledge, and the recipient's investment in acquiring knowledge after guiding its reconfiguration. This highlights the fundamental difference between KT by today's EMNCs and conventional diffusive knowledge transfer by DMNCs.

Figure 1 is about here.

The left and right sides of the triangle, illustrating DMNCs' KT to emerging markets and the ultimate source of EMNCs' knowledge, lie beyond the scope of this paper. The left-hand side indicates how EMNCs have adapted DMNCs' superior knowledge for relevance enabling

transfer to their own and other emerging markets. This is why they can be knowledge mediators. The right-hand side acknowledges that the African countries in this study have also acquired knowledge directly from DMNCs; but the extensively reported problems in making that knowledge effective has limited such direct transfers, and steered later-arriving EMNCs towards adapting knowledge for relevance. The predominant flow in recent decades has been of relevant knowledge, reflected in the base of the triangle.

5.2 Limitation and contribution

This study makes use of extensive case study research on Chinese MNCs. These account for a large proportion of the present EMNC population, but may also differ (structurally and behaviourally) from non-Chinese MNCs. As explained in Section 4.4 and the beginning of this section, there may be factors that make CMNCs better placed than other MNCs to generate and transfer relevant knowledge through recipient ownership and knowledge mediation (such as domestic market characteristics and relational proximity with emerging markets). Further research is needed to assess the extent to which CMNCs' experience – summarised in our seven propositions - can be generalised to other EMNCs.

Despite this possible limitation, our study contributes to both management research and practice in a number of ways. For management practice, it provides timely and important evidence on EMNCs' KT in emerging markets, now a key source of emerging markets' knowledge acquisition whose scale and significance have only recently gained attention. For management research, our study advances theoretical frontiers in three main areas. First, our research contributes to KT theory by identifying a new type of knowledge - relevant knowledge - and a new transfer model - recipient ownership – associated with EMNCs. Relevance arises from adapting knowledge acquired in advanced markets to the more basic requirements of the host emerging markets, primarily through applicability, assimilability and affordability (the 3As). "Ownership" denotes recipients' exertion of influence on what

knowledge to transfer and how it is transferred, primarily through selection, scrutiny and synthesis (the 3Ss). We thereby promote a shift in the focus of KT theory, from the current focus on DMNCs' linear transfer of superior knowledge to EMNCs' interactive transfer of relevant knowledge, and from recipients as passive learners to recipient-directed transfer. We advance the assessment of EMNCs as knowledge providers in emerging markets, looking beyond the longstanding focus in KT research on DMNCs as dominant sources of KT to emerging markets.

Second, our study contributes to a better understating of the competitiveness of EMNCs, which is now a frontier topic in the study of emerging market firms, from both a theoretical and empirical perspective. Our study demonstrates a major and previously neglected process and mechanisms through which EMNCs achieve competitiveness in emerging markets, i.e. by adapting the knowledge they acquired from DMNCs and making it more relevant to the host country through the 3As and 3Ss. The relevance-based view moves beyond present perceptions of EMNCs' competitiveness, which deny that they possess any significant strategic resource underpinnings, and assume them to depend on cost advantages only. It complements and helps to refine the composition-based view (CBV), supplying more detailed insight into how EMNCs compose and transfer their knowledge to other emerging markets. Our empirical findings allow us to go further, demonstrating why and how Chinese firms are particularly good at operating in emerging markets by reconfiguring ordinary resources into relevant knowledge to fit the specific demands and conditions of host countries.

Third, the "relevance-based view" can also contribute to developing the CBV of EMNC growth, as an alternative to the RBV and KBV, which more appropriately characterise DMNC growth. According to the relevance-based view, it is less the superiority than the

relevance of the transferred knowledge to recipients that confers a firm's competitive advantage and hence growth. Table 6 sets out how our study contributes to KT, IB and firm growth theories.

Table 6 is about here.

Table 1 Selected case studied CMNCs and interviews

Case	Core businesses	Interviewees	Information of the interviewee (IV)	Year of the interview	Venue of the interview
1	Bridge, road, port etc	IV1 IV2 IV3	SH Kenya SH Ethiopia Senior manager Ethiopia	2009 2014 2014	Kenya, Ethiopia Ethiopia
2	Airport construction, etc	IV4 IV5	SH Kenya CEO of the parent firm	2009 2009	Kenya China
3	Railway design, construction, service etc	IV6 IV7 IV8	Senior manager Ethiopia Senior manager Ethiopia Construction commander	2014 2014 2014	Ethiopia Ethiopia Ethiopia
4	Railway design, construction, service etc	IV9	Senior manager Ethiopia	2014	Ethiopia
5	Water system, glass manufacturing, wind power	IV10 IV11 IV12 IV13	SH Cameroon Senior manager Ethiopia Senior manager Ethiopia Senior manager Tanzania	2009 2014 2014 2013	Cameroon Ethiopia Ethiopia Tanzania
6	Road, houses, shopping malls	IV14	SH Kenya	2009	Kenya
7	Dam, power plant, engineering etc	IV15 IV16 IV17 IV18	SH Sudan CEO, Sixth Bureau Senior Manager Sudan SH Kenya	2008 2008 2008 2009	Sudan Sudan Sudan Kenya
8	Sport stadium, house etc	IV19	SH Cameroon	2009	Cameroon
9	Dam, power plant, machinery	IV20	Site manager Sudan	2008	Sudan
10	Dam, power plant, water etc	IV21	CEO of parent firm	2011	China
11	Dam, power plant, house etc	IV22	SH Ethiopia	2009	Kenya
12	Design, construct and invest all infrastructure projects	IV23 IV24 IV25 IV26	CEO of parent firm Deputy CEO of parent firm Senior marketing officer of parent firm SH Kenya	2012 2011 2012 2009	China China Kenya Kenya
13	Oil, gas and underground heating drilling	IV27 IV28 IV29	SH Kenya Site manager Kenya Site Manager Kenya	2009 2009 2009	Kenya Kenya Kenya
14	Power plant design, construction, constancy	IV30 IV31	SH Ethiopia Site manager Ethiopia	2014 2014	Ethiopia Ethiopia
15	Power plant, transmission line, equipment supply	IV32 IV33 IV34 IV35 IV36 IV37	SH Sudan Senior manager Sudan Senior manager Sudan Junior manager Sudan Senior manager of parent firm Senior manager of parent firm	2008 2008 2008 2008 2012 2012	Sudan Sudan Sudan China China China
16	Telecommunications electronic	IV38 IV39 IV40 IV41 IV42 IV43	SH Cameroon Senior manager Cameroon Senior manager Kenya Senior manager Kenya CSR manager Tanzania SH Ethiopia	2009 2009 2009 2009 2013 2014	Cameroon Cameroon Kenya Kenya Tanzania Ethiopia
17	Telecommunications electronic	IV44 IV45 IV46 IV47 IV48 IV49	Senior manager Kenya Senior manager Kenya CSR manager Tanzania Senior manager Ethiopia Senior manager Ethiopia Senior manager Ethiopia	2009 2009 2013 2014 2014 2014	Kenya Kenya Tanzania Ethiopia Ethiopia Ethiopia
18	Establish industrial zone	IV50	Senior manager Ethiopia	2014	Ethiopia

19	Oil extraction, refinery, petrochemical, oil transportation and related services and constructions	IV51 IV52 IV53 IV54 IV55 IV56 IV57	SH Sudan CEO of the Refinery CEO of the petrochemical Senior manager Sudan Senior manager Sudan Chief engineer Sudan Senior manager of the supply firm	2008 2008 2008 2008 2008 2008 2008	Sudan Sudan Sudan Sudan Sudan Sudan Sudan
		IV58 IV59 IV60 IV61 IV62 IV63 IV64 IV65 IV66 IV67 IV68 IV69 IV70 IV71 IV72 IV73 IV74 IV75 IV76 IV77 IV78 IV79 IV80 IV81 IV82 IV83 IV84 IV85	Africa chief, Exim Bank of China Sudanese officer negotiating with C18 Senior officer of Sudan Ministry of Mineral and Energy Senior officer of Sudan Ministry of Finance Senior officer of Sudan Ministry of Trade&Investment Chinese Commercial Counsellor of Sudan Chinese Commercial Counsellor of Cameroon Chinese Commercial Counsellor of Kenya Chinese Commercial Counsellor's PA Tanzania Chinese Commercial Counsellor of Ethiopia Chinese Ambassador, Tanzania Chinese Ambassador Nigeria Chinese consultant of Tazara Senior officer of Tazara Sudanese employee in a client firm of C15 Sudanese employee in a rival firm of C15 Sudanese employee in C15 Kenya Road Authority Officer of Cameroon Ministry of Trade& Investment Dept Head of Ethiopia Ministry of Social Welfare Local technician of C14 Senior officer of Ministry of Water and Energy Knowledge transfer department head, Ethiopia Railway Corporation Senior officer, Ministry of Planning of Cameroon Minister, Ministry of Foreign Affairs of Sudan Head of Foreign Investment, African Union British supervisor of C9's project in Sudan Former chief engineer of Jin Feng (a wind power firm in China)	2008 2008 2008 2008 2008 2008 2009 2009 2013 2014 2013 2014 2013 2013 2008 2008 2008 2009 2009 2014 2014 2014 2014 2009 2008 2014 2008 2015	Sudan Sudan Sudan Sudan Sudan Sudan Cameroon Kenya Tanzania Ethiopia Tanzania Emails/calls Tanzania Tanzania Sudan Sudan Sudan Kenya Cameroon Ethiopia Ethiopia Ethiopia Ethiopia Cameroon Sudan Ethiopia Sudan China

Notes: (1) This table includes the case studied Chinese firms in Africa's infrastructure sector. (2) All cases but C16 and C18 are state owned. All were operating in more than one country. The far right column indicates the basic information of interviewees working in the case studied firm. (3) IV1-57 were interviewees working in the case studied CMNCs. IV58-85 were interviewees who were not in the case studied firms but provided information on them. (4) SH = subsidiary head.

Table 2 CMNCs' knowledge origin

Knowledge origin	Applicable Cases
Learning by doing in China	Yes for all cases
Partners of DMNCs in China (e.g. being the partner of an IJV or strategic alliance with DMNCs or being a supplier of DMNCs)	Yes for all the cases except for 2, 6, 8, 12,14, 18
Opportunities of learning from DMNCs in China (e.g. applying technologies and equipment of DMNCs and hiring former DMNC employees)	Yes for all cases
Partners of DMNCs in host country (e.g. IJV, supplier, SA, etc)	Yes for C9, 15, 16, 17, 19
Opportunities of learning from DMNCs in host country (e.g. buying technologies and equipment, and hiring former DMNC employees)	Yes for all cases
Learning by doing in host country	Yes for all cases

Note: The interview question was: "How did your company acquire current knowledge?"

Table 3 CMNCs' knowledge transfer mechanisms

Transfer mechanisms	Applicable cases
Meetings and discussions between host and home participants in planning stage	Yes for all the cases
Host country partners visited completed and ongoing projects in China during planning and implementation stages	Yes for all the cases
CMNCs set up scholarships for locals to study in China and other countries	Yes for C16, 17, 19.
CMNCs offered formal training for recipients in college, forums, professional conferences etc	Yes for C3, 4, 7, 14, 16, 17, 19.
CMNCs offered on site training for local staff	Yes for all cases.
CMNCs invited international consultants, project managers, designers etc to help to reach international standard and further assist knowledge transfer to African recipients	Yes for all cases.
Recipients' participation in the projects at senior level (as supervisors, engineers, inspectors, senior managers)	Yes for C1, 3, 4, 14, 16, 17, 19.
Recipients' participation in the projects at middle level	Yes for all.
Recipients' participation in the projects at lower level (e.g. over half of the employees are locals)	Yes for all.
Recipients' established dedicated knowledge transfer program along with the project	Yes for C3, 4, 14, 16, 17, 19

Note: The interview question was: "How was the CMNC's knowledge transferred to the local operation?"

Table 4 What knowledge created CMNCs' competitive advantage

Knowledge	Applicable cases
Better meet local demand (e.g. offer highly demanded project/product)	Responded as "the most important" for all the cases
Lower cost (e.g. bidding price is lower)	Responded as the second most important for all the cases
Fast delivery (e.g. less delay; quicker to finish the project)	Responded as "also important" for all the cases
Better fit local conditions (e.g. find local alternative resource/approach)	Responded as "also important" for all the cases
Suitable technology for the project	Responded as "also important" for all the cases

Note: The interview question was: "What kind of knowledge is most important in creating the competitive advantage of your company (the CMNC)?"

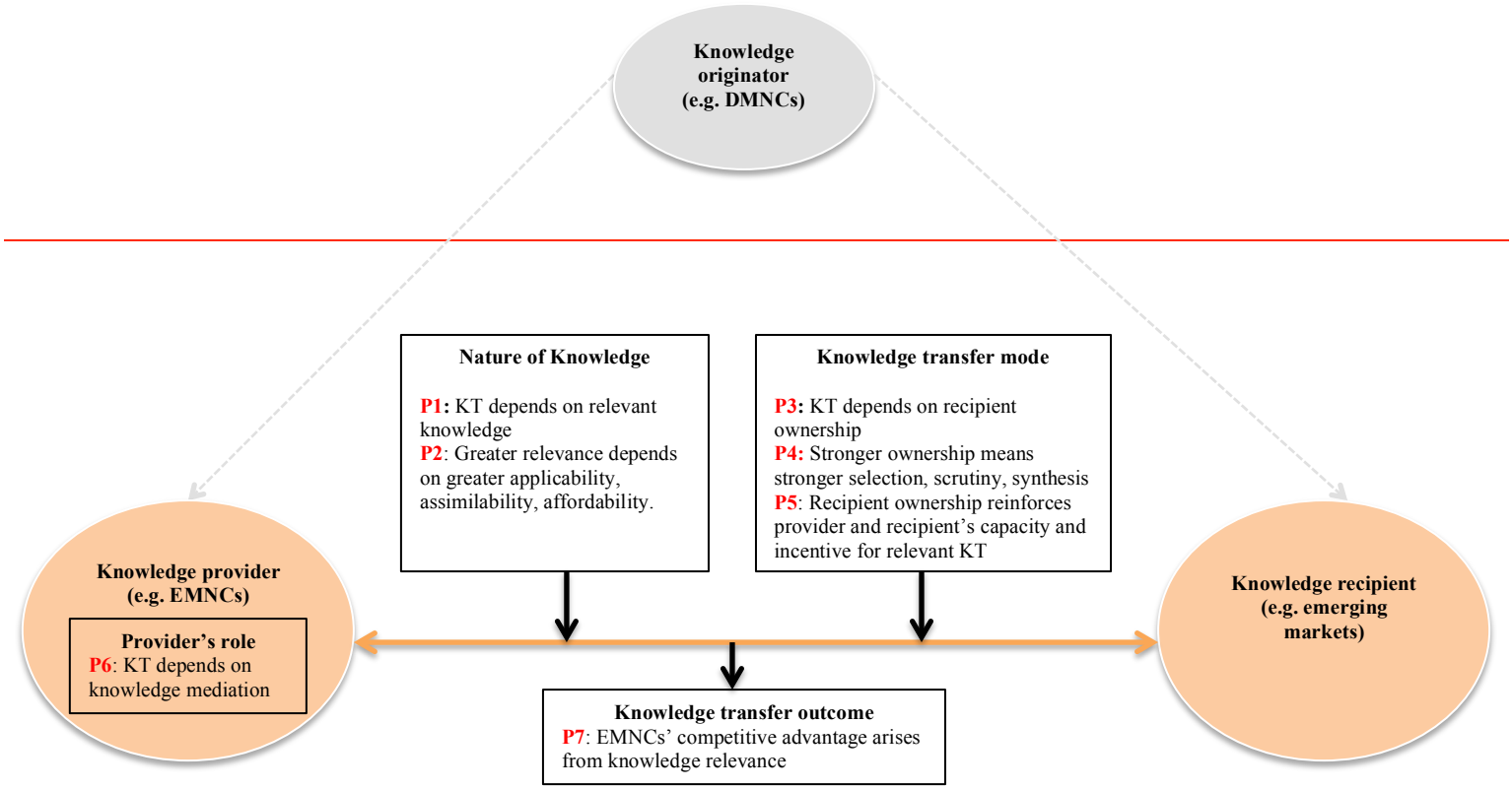
Table 5 CMNCs' knowledge characteristics and their relevance to recipient's knowledge

Characteristics (comparison to superior knowledge)	**Applicable Cases**	**Typical quotes**	**Relevance to recipient's knowledge**
Applicability able to provide modified and customised products and services through second-innovation in a new context using local-fit solutions. (contrast to superior knowledge's "originality": advanced techniques providing goods and services not previously available in market)	All	"Last decade China learnt from the Europe in wind power technology and has done so many such wind power plants at lower cost in China" (IV79). "We must become the Toyota of the telecommunication industry, i.e. we do not aim for the best technology but the most practical technology. For example, we researched and produced generators using solar power because Africa is short of energy but rich in solar power" (IV38). "we added small functions such as radio. It only raised the cost by $1-2 per set, but local customers loved it" (IV47). "Whatever exists locally, we use that" (IV8).	Ensures most efficient way to meet local product/services needs with immediately available skills and materials
Assimilability shaped for ease of acquisition, overcoming comprehension and conflicting-interest barriers, and exploit complementarities with existing knowledge. (contrast to "dissimilarity": shaped around novelty reforming or replacing existing knowledge, requiring substantial new learning or re-learning)	All	"After failure to communicate in language, we made a model for the local staff, so they use the model as a standard to measure their work" (IV7). "We asked the Chinese employees to demonstrate to skillful local employees first, and then the skillful ones will show the rest of the employees" (IV8). "Ministry of Energy of Ethiopia dispatched a lecturer of Addis Ababa University to be our project consultant, who brought a small team to the project site. For every step of our operation, he asked us in detail what that step was and what the principle was behind that step. He then wrote down in detail into the handbook" (IV31).	Lessens the gap between provider and recipient knowledge bases, enhancing cooperation and knowledge absorption
Affordability able to provide higher value-price ratio, cost savings in installing and running new operations, and more effective products and services. (contrast to "advancement": able to provide new and high quality products and services with price kept high by production cost and/or intellectual property premium)	All	"The quality is good and the price is the best" (IV75). "We meet the same criteria [in quality] but our bidding price is 20% -50% of the DMNCs" (IV64). "For this dam renovation project funded by Japan, France, Germany and Arabic Trust, French company Soja's bid price was $50m, we bid at $32m. We still made a good profit from it" (IV18). "Lower cost is made from our lower salary, lower cost equipment and logistic, and many more. Mind set is also important. Project planning needs to be flexible. For instance, if necessary, the workers are requested to work over hours to complete a project so as to avoid time and material being wasted due to the work shift change"(IV10).	Delivers urgently needed infrastructure in shortest feasible timeframe with limited resources, reduces cost of education/training needed for project replication

Table 6 The contribution of this study to existing theories

Key elements in a KT process	Extant theories with the focus of DMNCs	This study with the focus of EMNCs	The contributions of this study to extant theories
Knowledge provider	Knowledge originator	Knowledge moderator	It contributes to KT theory by examining EMNCs as a new knowledge provider, arguing that a knowledge mediator role is important for KT in emerging markets
Knowledge	Superior knowledge; DMNCs achieve competitive advantage by transferring superior knowledge to recipients	Relevant knowledge; EMNCs achieve competitive advantage by creating relevant knowledge with recipients	It contributes to KT and MNC competitiveness theories by identifying the relevant knowledge with characteristics of applicability, assimilability and affordability (3As) and arguing that the relevance of transferred knowledge matters more than its superiority for emerging markets
KT mode	Linear; teaching-learning	Interactive; recipient ownership	It contributes to KT theory by examining how an interactive model is more suitable for KT in emerging markets
Recipient	Passive learner being requested to improve absorptive capacity	Active learner exerting recipient ownership	It contributes to KT and absorptive capacity theories by identifying the recipient ownership with characteristics of selection, scrutiny and synthesis (3Ss) and arguing that recipient ownership not only contributes to the creation of relevant knowledge and improve the KT process but also enhances the recipient's capacity and incentive to learn

Figure 1 EMNCs' KT in emerging markets: a "relevant knowledge recipient ownership model" (within large rectangle)



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