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Title Page

Toward a Theory of Supply Chain Fields -- Understanding the Institutional Process of Supply Chain Localization

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Abstract

When western multinational enterprises (MNEs) build end-to-end supply chains (SCs) to produce and distribute a product or deliver a service in emerging economies, the process is called supply chain localization. These companies encounter institutional environments with regulative, normative and cognitive characteristics very different from those in their home countries. SC localization uncovers and creates institutional voids; we argue that SC localization is a process of institutional change, requiring the MNE to build new institutional infrastructure. To the best of our knowledge, little is known about the institutional process of SC localization and its effects. We carry out a longitudinal case study to investigate SC localization of four MNEs in China. These MNEs are leaders of sustainable business practices in their industries, a distinction that highlights institutional voids in their SC settings. Based on the idea of fields in institutional theory, we build a mid-range theory by introducing the notion of the *supply chain field.* Our study identifies and contextualizes the key elements of an SC field. It recognizes MNEs, government and semi-government entities, and other participants as institutional actors who serve as architects and builders of the new SCs. We find that SC localization is an institutional process, taking place at both actor and field levels, where continuous ideation of new operations practices leads to structuring of the both the SC and SC field.

Keywords: supply chain field, localization, supply chain, MNE, emerging markets, institutional theory, case study, sustainability

1. Introduction

When western multi-national enterprises (MNEs henceforth) create end-to-end supply chains (SCs) to produce and distribute a product or deliver a service in emerging economies, the process is considered SC localization (Luo, 2007). Localizing an end-to-end SC includes establishing supply bases, production facilities, distribution networks, service centers, and the like, through which products physically flow (Carter et al., 2015). As the developing economies undergo economic transformation, industry sectors shift their labor-intensive, export-oriented manufacturing operations to focus on rising markets and middle-classes. MNEs have begun to develop, design and build sophisticated SCs from raw material extraction to production and retailing within host countries' borders. Luo (2007) pointed out that as MNEs evolve from foreign investors to strategic insiders, their activities move from production relocation and outsourcing to value chain creation. To meet the demands in these countries, veteran MNEs have begun leveraging strengths across business units to take advantage of the clustering effect to enter and develop markets and SCs in regions with similar institutional characteristics (Arregle, et al., 2009; Cantwell, 2009; Miller and Eden, 2006; Rugman and Verbeke, 2004).

When we delve into SC creation in an emerging economy, we often see that SC localization occurs concomitantly with the industrialization and economic reform of an industry sector in the host country, wherein the government opens up traditionally state-owned and protected sectors (e.g., agriculture, real estate, banking) or under-developed regions to attract foreign companies. Their objective is to reap the technology and expertise of the MNEs as a stimulant to development. Against this backdrop, one interesting phenomenon is that as the MNEs introduce new products, production technologies, and management systems, they often find existing SCs and management systems incompatible. For instance, the industry sector may

have been dominated by state-owned enterprises with dilapidated production systems and minimal clean production awareness, or the existing SC may be incomplete—lacking integral functions, infrastructure or processes found in their home countries. Lastly, the germane industry sector in the host country often has less-developed market mechanisms as well as different institutional contents along the cognitive, normative and regulative dimensions (Scott, 2014).

Therefore, establishing a physical SC in a host country is different from the same task in an MNE's home country, involving institutional work beyond typical operations. MNEs encounter the so-called "institutional void." Broadly speaking, it refers to weak or absent infrastructure, property rights protections, governance systems, and rules and norms of social conduct. An institutional void implies a deficient institutional infrastructure. It inhibits the creation and functioning of markets, industries and SCs (North, 1990).

Institutional voids challenge the creation of localized SCs in emerging economies. The essence of the challenge is what Zaheer (1995) calls the "liability of foreignness." Pfeffer and Salancik (1978) point out that MNEs must establish "created environments" to access materials and relational resources in a new country. While they say little about what defines a "created environment," we posit that it has to do with creating new institutional contents (understandings, associations, laws, etc.), to accommodate the MNE's technologies and practices. Localization actually creates and reveals institutional voids—the industry in question either did not exist or operated "just well enough" prior to the MNE's arrival. Radically different technologies, practices and management systems demand drastic changes in existing social-technical systems. While there are country-level analyses of institutional voids in entrepreneurship and strategy research (Mair, et al., 2012; Webb, et al., 2010), we know little about how institutional voids manifest at industry and SC levels or how firms and institutional actors address them.

A logical first step in considering institutional voids is to identify voids according to the normative, cultural-cognitive and regulative institutional "pillars." The three pillars (also called institutional elements or carriers), together with associated activities and resources, provide the framework for societal stability and meaning (Scott, 2014). Filling institutional voids, then, amounts to creating contents along these dimensions. In essence, it is to bring about institutional change. This leads us to such concepts as strategic action and institutional fields to understand the actors that fill institutional voids and direct change. Specifically, strategic action is collective action with the purpose of instigating institutional change (Fligstein and McAdam, 2011). An institutional field is a meso-level social order in which the actors (individual or collective) coexist according to a set of shared understandings about their purposes, power relationships and prevailing rules (Scott, 2014). Strategic actions change or introduce new elements into the existing institutional field.

To the best of our knowledge, studies on localization have largely dealt with market entry decisions; they consider firms and country-level institutional characteristics (Berry, et al., 2010; Cantwell, 2009; Rugman and Verbeke, 2004). There is little consideration of the institutional processes by which an MNE creates an SC in an emerging economy. This lack of understanding of the institutional process associated with SC localization motivates our study. We argue that when an MNE confronts deficiencies induced by institutional voids, it must act in concert with others for a successful SC localization. We believe that a starting point is to conceive SCs in the context of an institutional field. This concept views localization as a challenge of populating institutional voids. It provides a basic framework to identify institutional actors and their strategies and interactions in the change process.

As an incremental step, we build on the basic understanding of institutional fields to develop a mid-range theory through theory elaboration (Fisher and Aguinis, 2017; Ketokivi, 2006; Merton, 1957). To do so, we carry out a longitudinal case study analyzing the strategies of four western MNEs in their efforts to create SCs in China. We set out to answer two related questions:

1. *How do the MNEs engage with other institutional actors to overcome the challenge imposed by institutional voids?*
2. *How does collaboration among institutional actors influence SC localization?*

In what follows, we review relevant literature, summarize our methodology, conduct within- and cross-case analyses, discuss our findings, and offer propositions.

2. Theoretical Background

2.1 Localization in emerging economies

Cross-cultural comparisons in quality management, outsourcing and re-shoring, and closer focus on the bottom of the pyramid suggest growing attention to operations management in emerging economies (Parmigiani and Rivera-Santos, 2014; Ruamsok, et al., 2007; Rungtusanatham, et al., 2005). While many global SCs end in the western buyer's home country (the buyer coordinates overseas production and sourcing of goods and services coming ashore), scholars are showing increasing interest in operations management within emerging economies, which represent growth opportunities. At the same time, these emerging economies pose challenges for MNEs. Giunipero, et al. (2008, 83) lamented that global SCs represent one of the least-published and -understood topics in SCM literature over the past decade. A decade later, we see special issues in OM journals on emerging economies, suggesting continued research and discovery (Flynn, et al., 2015; Zhou et al., 2016).

Given growing development and demand in such economies, MNEs' have shifted from building export-oriented manufacturing to developing mature products for their hosts. Luo (2007) pointed out that MNEs have changed from foreign investors into strategic insiders and shifted from production relocation to value chain creation. Veteran MNEs have implemented strategies across business units and regions by building globally-integrated SC operations. Value chain creation is a process of building an SC in the emerging economy. We call this process (that is, setting up end-to-end SCs in emerging economies) SC localization.

In international business studies, localization often refers to market-entry decisions. Scholars examine how country-level institutional environments influence MNEs' market entry strategies (Berry, et al., 2010; Xu and Shenkar, 2002; Zaheer, et al., 2012). International business studies of global expansion adopt this institutional perspective, focusing on overall strategies of country selection and coordination across subsidiaries. For instance, Aggregle et al. (2009) looked at the cluster effect of setting up foreign subsidiaries. The number of subsequent subsidiaries in a country is in part determined by a firm's prior activity at the regional level. Cantwell (2009) points out the reason is to exploit institutional compatibility and corporate coherence among selected locations. However, little is said as to how an MNE, once it decides to localize an end-to-end SC, tackles the institutional challenges and barriers that hinder the process.

Scholars point out that MNEs need to leverage political mechanisms in host countries to alter and create favorable economic conditions. Pfeffer and Salancik (1978, Chap. 8) coined the term "created environment," arguing that MNEs take political actions to reduce the uncertainty arising from larger, unfamiliar social systems. Political actions involve MNEs proactively influencing government policy by building long-term relationships with government authorities

across various issues (Hillman and Hitt, 1999). They gain legitimacy through isomorphic adaptation or strategic manipulation of social expectations (Scherer et al., 2013). Analysis of political actions focuses on antecedents; little is said of how MNEs influence policies in a host country (Hillman, et al., 2004).

"Created environment," on the other hand, suggests an MNE modifies the pre-existing business conditions in an emerging economy. That is, an MNE tries to change the business environment of the host country to accommodate its "outsider" way of doing business. The less accommodating the host industry sector is, the more pressure an MNE will have to exert. Starting with Scott's (2014) definition of "institution" as the cognitive, normative and regulative pillars of the host society, and considering that these pillars exist to "produce meaning, stability and order," it stands to reason that when the host country's business environment is incompatible with the MNE's products, production technologies and management systems, the MNEs will attempt institutional change.

Hillman et al. (2009) pointed out that these assertions have taken on truism status; not much of the work in this area tries to understand the essence of the created environment or how the MNE's political actions actually create it. To answer this question, we need to look closer than country-level characteristics; we examine industry- and SC-specific institutional dynamics. As OM scholars point out, we must take into account contextual differences across geographic regions and sectors *within* a country to understand firms' strategies (Cui and Liu, 2000; Karnani, 2007; Zhao, et al., 2006).

2.2 Institutional voids, institutional actors and institutional entrepreneurship

The "liability of foreignness" discussed above can be attributed to institutional voids. "Institutional voids" are defined as a lack of institutions (or failure of existing institutions) to

support market development (Mair, et al., 2012). Institutional voids can occur in both formal and informal institutional arrangements. Formal institutional voids occur when the institutions fail to provide basic governance, property rights protection, infrastructure, and/or rule of law (Khanna and Palepu, 1997). When formal institutions fail to provide these basic systems, transaction costs that inhibit market creation and functioning appear (North, 1990). Informal institutional voids are present when a society's prevailing traditions, beliefs, and rules of social conduct are unable to support stable, efficient, and effective transactions and operations (Mair et al., 2012). Orr and Scott (2008) point out that such non-regulatory institutions often constitute the most challenging aspects of foreign operations. This conceptualization of informal institutional voids *does not* suggest an *absence* of norms, values, and beliefs in a society; rather, these voids can manifest when relational mechanisms are manipulated, unavailable, or unequally accessible to individuals, resulting in failed transactions and operations (Khoury, et al., 2017).

Scholars consider institutional actors (i.e., customers, suppliers, employees, governments, trade associations, non-profit organizations and communities) agents who instigate, support, or resist fundamental change in a social system. Researchers pay special attention to those who are considered institutional entrepreneurs (Battilana, et al., 2009; DiMaggio, 1988; Lawrence, et al., 2009). Eisenstadt (1980) considers institutional entrepreneurs as actors who serve as catalysts for structural change and take the lead in initiating and directing change.

DiMaggio (1988) introduced the notion of institutional entrepreneurship in an effort to explain how actors can change an institutional landscape. Facing institutional voids, these entrepreneurs reveal the crisis, frame the issues, and mobilize support (Greenwood, et al., 2002; Snow, 2004). They catalyze structural change, driving and directing it (Greenwood and Suddaby, 2006; Peng, 2000; Thornton, et al., 2005; Tracey et al., 2011). The process demands the ability to

navigate “foreign” cultural norms; institutional entrepreneurs must possess strong social skills to develop alliances and promote cooperation (Fligstein 2001; Lawrence, et al., 2002; Rao, 1998).

2.3. Strategic action and institutional fields

Strategic action is “the attempt by social actors to create and maintain stable social worlds by securing the cooperation of others” (Fligstein and McAdam, 2011). The central issue here is control—the creation of a unified identify or a coalition of suppliers, customers and regulators to oversee participants. This control entails changing the actors’ collective mindset. Institutional theory scholars turn to the notion of fields to explain the forces at work and the mechanism of change.

Fields and field theory stem from studies of physical fields in science (see Martin, 2013 for a review). Gravitation and magnetism offer a metaphoric sense of forces, positions and orientation of particles (or actors) in institutional theory. Field theory in social science purports to explain how the interaction between the field and elements within it results in changes in the states of the elements (see Zietsma, et al., 2017 for a review). Fields are considered the basic structural building blocks of modern political/organizational life. As “the central construct” of institutional theory, fields are variously labeled as institutional fields (Wooten and Hoffman, 2008), organizational fields (Scott, 2014) or strategic action fields (Fligstein and McAdam, 2011). Coming from different social science disciplines and research interests, these conceptions of fields share some meanings: fields are (1) local social orders—structured spaces of coalition and domination among actors (Fliegstein, 2001, 107); (2) collections of diverse, interdependent organizations that participate in a common meaning system (Scott, 2014, 106) and (3) accretions of forces and organized striving. Fields are arenas in which meanings are contested and power shifts (Wooten and Hoffman, 2008; Zietsma et al., 2017).

DiMaggio and Powell's (1983, 148) definition of an organizational field is the most pertinent to SC management, focusing on production operations and calling out the actors involved. Fields are recognized areas of institutional life, including key suppliers, resource and product consumers, regulatory agencies and other organizations that produce similar services or products. Kostova et al. (2008, 998) argue that organizational fields in the context of MNEs are ill-defined at best. They explain that an MNE often has multiple subsidiaries and contends with fragmented or conflicting institutional environments. Inconsistencies between these environments do not allow the easy emergence of shared patterns necessary to define a field. Our study avoids this complication by focusing on individual MNE subsidiaries in a single host country. An organizational field, however, with its attention to the overall strategic actions of a focal firm, does not consider the institutional process of SC structuring. Understanding this process requires us to treat the SC as the unit of analysis.

Fields are cognitively constructed spaces. They are nested, and their boundaries are vague and permeable. Any given field is embedded in a broader environment consisting of countless proximate or distal fields (Fligstein and McAdam, 2011). Particular tasks (e.g., SC localization) or issues (e.g., social conflict) identify a field and actors. We surmise that within an economic system, an SC constitutes a meso-level field, embedded in one or more industry field(s). Institutional forces such as culture or laws that influence actors and the SC could come from outside the given field.

The concepts reviewed above provide the basic language allowing us to articulate the challenge of SC localization and describe the localization process. To wit, as a western MNE introduces new products, technologies and practices in an emerging economy, it also propagates new institutional elements in the host country, thereby exposing or creating institutional voids.

Institutional actors need to resolve the cognitive tensions and incongruities of norms and behavior imposed by the voids. The framework of institutional fields lends us the basic language to explain the processes that enable SC localization.

3. Methodology

Since we are exploring an under-researched area, a case study method in theory building is appropriate (Eisenhardt, 1989; Glaser and Strauss, 1967; Miles and Huberman, 1994). Our initial conceptualization of the research questions is built on the field concept in institutional theory. In this sense, it conforms to what Merton (1957, 9) called "theoretical stepping stones of the middle distance" or "mid-range theory." It falls under the strategy of theory-building through theory elaboration (Fisher and Aguinis, 2017; Ketokivi, 2006).

3.1 Theoretical sampling

We take a theoretical sampling approach to MNEs and corresponding SCs (Eisenhardt, 1989, 537), with mainland China as the research setting to control the country factor. We use two criteria to identify the MNEs. The first is sustainability. To select MNEs, we targeted those with strong triple-bottom-line oriented practices (Guide, et al., 2003; Klassen and Whybark, 1999; Linton, et al., 2007). In many industry sectors, sustainability is increasingly being institutionalized as an everyday part of SC management (Pagell and Shevchenko, 2014). Because adoption of sustainability practices is influenced by technological capability, regulatory mandates, and the values and beliefs of industry participants, we expected that MNEs with strong sustainability missions would encounter more institutional voids in emerging economies, where sustainability would challenge prospective suppliers and customers.

The second criterion encompasses two measures of modernity: production/process complexity and institutional voids. Production/process complexity has two dimensions: (1) the sophistication of technology and intellectual property in the MNE's production/process, and (2) the number of suppliers and customers under the purview of the focal MNE (Carter et al., 2015). Different levels of production/process complexity gave us SCs with different operational sophistication and dynamics (Bozarth et al., 2009; Skipper et al., 2008; Whybark and Vastag, 1993). Institutional voids are the gaps in cognitive, normative and regulative contents of SCs between the MNE's host and home countries that result in failed transactions and operations (Khoury, et al., 2017).

3.2 Samples

We approached the World Wildlife Funds for Nature (WWF, wwf.org) to identify an initial pool of MNEs. As the largest conservation organization in the world, WWF maintains a "Climate Savers" list. These companies are evaluated by their compliance with two principles: to become the best in class in reducing greenhouse gas emissions, and to influence market or policy developments by promoting their vision, solutions and achievements. The Climate Saver companies are *not* necessarily carbon neutral, yet they have committed to a higher standard. They are monitored by means of annual reporting and verification (Climate Savers, 2016); the Carbon Disclosure Project does the reporting, and an independent third party verifies results.

From the Climate Saver membership list, we initially identified eight manufacturing-oriented MNEs. We assessed these companies' reports and archival information, including news reports and industry analyses. We concluded that they are proactive and committed to greenhouse gas reduction and efficient operations. The senior executives of these companies all voiced support for our research. We conducted pilot interviews with senior managers from the

headquarters and Chinese offices of these companies to determine their fitness according to our sampling logic. Through this process we excluded four companies because either we were unable to gain access to confidential information, or their SC operations in China were too limited. Ultimately, we chose four companies for this study: Fairmont Hotels and Resorts ("Fairmont" henceforth), Lafarge, Nestlé and Tetra Pak ("TetraPak"). All four have established SC operations from production to domestic sales in China, meeting our definition of a localized SC. The four MNEs are profiled in Table 1.

Using archival data (e.g. news, industry reports), we made a qualitative assessment of the four MNEs' SCs and corresponding industry sectors in China to ascertain that these sectors represented different levels of modernity. Granted such assessment a priori in case analysis is tentative, it nonetheless gave us some assurance that variances in institutional voids and production/process complexity was present in our samples. In other words, these selected cases filled conceptual categories (Eisenhardt, 1989, 533). We discussed any disagreement in assessment among the researches until we reached consensus. Figure 1 illustrates how these four companies map into the two dimensions of modernity. The distribution of these four companies in Figure 1 suggests sampling adequacy, as most other companies would occupy the same space.

Table 1 about here

Figure 1 about here

3.3 Data collection

We collected data between September 2010 and October 2013. Our research was longitudinal in the sense that the data collection involved observation of localization as a process of institutional change and a significant portion of our data is retrospective, capturing these MNEs' entry into China several decades ago (Van de Ven and Sminia, 2012). We spoke with key

stakeholders in each company, including suppliers, government agencies and trade associations. Interviewees in each company included senior managers (e.g., vice president and directors), functional managers and operating staffs at both the corporate offices and the business units in China. They were responsible for corporate strategy, operations, sustainability, and government and public relationships in China, as well as SC, manufacturing, and service management in the plants. The interview protocol was customized for each company and updated after each interview (see Appendix 1). In each case we asked interviewees to focus on their particular product or service (e.g., cement or hotel service operations) to avoid generalizations and to limit the field being discussed to each focal product or service. In other words, we established the SC as the unit of analysis. Our SC investigations covered product development, sourcing, supplier management, internal operations and resource recovery. Questions on localization strategy focused on SC evolution in China, sustainability and stakeholder engagement activities.

Table 2 profiles the 43 interviewees in the four cases. A total of 57 interviews took place, of which 46 were face-to-face. Most interviews lasted about one hour, though some lasted more than three. Forty-seven interviews were in Mandarin and nine in English, with eight expatriates. All interviews were taped and transcribed. Researchers in this study are fluent in both Chinese and English. Data were coded and analyzed in the interview languages. The researchers visited the operations sites of all four companies, as well as those of their major suppliers and some customers.

Table 2 about here

We also collected archival data from company websites, news, internet blogs, annual reports and technical publications, in addition to examining the business models of each company in different countries, based on available archival information and interviews. The

purpose was to assess the relationships between corporate strategies and country strategies. All four MNEs have unique corporate strategies, executed differently through country-specific SC strategies. For instance, TetraPak's critical SC issue in China was establishing industrialized dairy production systems. In contrast, its Pakistani SC focus was to help create "milk pools" for small-scale and remotely-located dairy farmers. While TetraPak's strategies in these two countries differed, they both served the same overall corporate strategy: to ensure milk production scaled to the needs of processors who use TetraPak's packaging and equipment. In both countries, TetraPak considered these rural development activities as part of its sustainability-oriented positioning and localization strategy.

3.4 Data analysis

We analyzed our data in an iterative process, conducting within-case and cross-case analyses independently, then comparing coded data to ensure consistency. We discussed any different interpretations of events and transcripts. On many occasions we consulted the interviewees and archival information to resolve disagreements or technical questions. For instance, the machinery and infrastructure to recycle TetraPak milk cartons existed in the EU and Saudi Arabia, but not China. We received only a vague explanation during our field studies. So we interviewed recycling experts, including a TetraPak manager in Saudi Arabia. We also dug into the Chinese waste paper sector to understand the recycling economy. We found that the Chinese recyclers could not recover the necessary investment in new equipment from low-revenue recycled packaging materials. TetraPak had to work directly with garbage collectors to get more discarded milk cartons to its recycling partners and develop stopgap down-cycled products to make the effort worthwhile (see Section 4.4).

We conducted within-case analysis in two steps. During first-order coding, we tried to comprehend each company's history and the evolution of its Chinese SC. Then we zoomed in on critical localization initiatives, including accessing supplies, supplier development, production, distribution and sales. We paid particular attention to any changes in operational practices and existing SC structures due to the MNEs' entry. We soon realized that before an MNE sought out SC partners, it engaged in "issue-framing." That is, the MNEs were very vocal about their values, tasks and goals; they framed and presented them in the language of sustainability. It became clear that such issue-framing helped legitimize and justify their business practices. Thus we began to associate and interpret changes in operational practices and SCs from an institutional perspective. We used the three institutional pillars to categorize and describe these changes (see the last column in Table 8).

We recognize that the three institutional pillars were originally conceived and applied at the country level of analysis (Scott, 2014). They nevertheless provide the basic language to explore and articulate institutional contents at the supply-chain level. We found that the contents of these institutional elements differ at different levels of analysis. For instance, when we describe the institutional elements that correspond to an SC, we categorize standards and certification as normative elements (Scott, 2014, 60). This differs from country-level institutional analysis, where the norm would typically refer to conventions or implicit rules derived from national culture.[1]

Our coding and data analysis follows Gioia et al. (2012)'s approach to concept development and theory articulation. The cross-case analysis compares and contrasts common patterns in localization strategies and operations differences. Iterative axial coding eventually

[1] We acknowledge that comments from one reviewer helped us to clarify our application of the concepts of three institutional pillars in our analysis.

reduces data and unveils new themes and constructs (Section 5), which allows for further theorization by finding relationships among these constructs (Section 6).

To illustrate the coding process, we turn again to TetraPak. We first identified and categorized TetraPak's interactions with its stakeholders and its operations initiatives in creating the SC. During the coding and data reduction process, we saw that the company's political and operations activities were intertwined and even entangled—over time, certain seeming CSR and outreach initiatives (e.g., grazing land management education) turned out to be efforts to improve existing SCs and modernize the dairy industry. We also noted that some suppliers and customers were (semi-)government entities. Such observations became part of first order concepts. Through cross-case comparison we came up with second-order themes as findings (Section 5). These eventually lead to aggregate dimensions and a model that describes how these dimensions explain localization as an institutional process (see Figure 2).

Figure 2 about here

4. Case Summaries

We provide a digested analysis of the SC localization processes and milestone events. Each case narrative presents a glimpse of key players and the interactions that contributed to the formation of the SC. Tables 3 through 6 highlight each MNEs' projects and activities engaging institutional actors. We categorize these activities as upstream and downstream and organize them in chronological order. The chronology helps to illustrate the characteristics of strategic action as the new SC emerged. The last columns of these tables include our interpretation of the motive of such engagements and their strategic implications.

4.1 Fairmont

Fairmont adopts what we call a "franchising strategy"—transferring operations principles from the parent company to the emerging market, with measured adaptation. Institutional voids are negligible in the hospitality industry in China; competition is as strong as it is in the west. Fairmont follows the same environmental management principles and internal operations procedures as any other part of the company (See Table 3). Such a franchising model allows both standardization and local adaptation.

Table 3 about here

Fairmont was a joint venture with a local company that was actually owned by the municipal government, which also provided the real estate at the scenic lakefront. In addition to energy efficiency initiatives in internal operations, Fairmont built a strong eco-tourism brand, promoting local cuisine. Its service combined ethnic cultural experience with ecological protection. The hotel's executive chef bought from local farmers and provided technical support to transform farms into organic operations. Farmers introduced a variety of western salad greens for local markets, as well as the hotel.

4.2 Lafarge

The cement industry's environmental performance varies widely across regions in China. In the 1990s cement factories in the Southwest provinces were mostly inefficient, high-polluting state-owned companies. One ministry of the central government invited Lafarge to the region in hopes of cleaning up the local producers.

Lafarge's initial efforts focused on acquiring existing factories and closing or upgrading existing production lines. The acquisition agreements gave Lafarge access to both raw materials (quarries and limestone) and existing government customers, and required Lafarge to provide

pensions for laid-off workers. Lafarge was encouraged to collaborate with Chinese universities and the architecture institute, both semi-government entities, to develop new products for fast-growing infrastructure projects (See Table 4).

Table 4 about here

Seeing rapid urbanization as an opportunity, the company started developing urban building solutions in a partnership with Vanke, China's largest high-end real estate developer. In 2010, Lafarge began to manufacture and supply prefabricated insulated wall, floor and window products, leveraging its corporate research lab's expertise in green building. Occupying both ends of the SC, Lafarge and Vanke influenced the operations practices of everyone in between, including builders and contractors, to reduce pollution during construction. Venturing into residential building markets led the company to create service-oriented offerings and to introduce the life cycle concept into industry-wide energy-efficiency initiatives. We call Lafarge's localization strategy "grafting-bifurcation"—it started with incremental improvements in production; then diversified by commercializing products and services.

4.3 Nestlé

We call Nestlé's localization strategy "going native"—it totally immersed itself in the economic development of its suppliers (farmers) and their rural communities. Nestlé cultivated traditional tea farmers and converted them to coffee. Pu'er, an economically underdeveloped region bordering Vietnam and Myanmar, was one of two places in mainland China suitable for coffee production. In the late 1990s, the regional government welcomed Nestlé's overture to grow coffee as part of its economic development plan. It provided Nestlé with free coffee storage warehouses and farm demonstration fields, and helped to recruit farmers and coordinate production through its administration of agricultural cooperatives (see Table 5). To convert tea

growers to coffee, Nestlé provided farmers with interest-free equipment loans and guaranteed to pay a premium over and above the coffee price in the international market.

Table 5 about here

Nestlé's Agricultural Service Team (AST) provided the equivalent of the "extension services" of land grant universities in the U.S.—training, ongoing problem-solving, and coffee-related horticultural research. The AST was headed by a Belgian agronomist who had been living and working in Pu'er for more than two decades. The deep relationship with farmers helped Nestlé to fend off competitors who offered farmers higher prices. When several county governments in the region tried to undercut each other on coffee prices and set up their own brands, the Ministry of Agriculture asked Nestlé to dissuade them, because Nestlé had built strong relationships with the local governments and farmers.

Nestlé adapted to changes in the liberalized agricultural sector by taking advantage of the evolving forms of farm cooperatives and reorganizing its sourcing and SCs. For instance, co-ops based on families and kinships as production units replaced collective communes. Nestlé treated each co-op as a direct supplier, reducing transaction costs and stabilizing supply relationships, because the economic interests of the co-op members were more aligned.

4.4 TetraPak

TetraPak makes containers for ultra-high-temperature (UHT) milk, which has a three-month shelf life without refrigeration. UHT technology allows industrial-scale milk production and nationwide distribution. Sale of both packaging equipment and materials requires industrialized dairy SCs characterized by high processing throughput and steady milk quality. When TetraPak arrived in China in the mid-80s, a typical Chinese dairy SC was fragmented and regional. As a packaging supplier, TetraPak played a pivotal role in modernizing the Chinese

dairy industry. It methodically collaborated with ministries, universities and local governments to establish training programs and formulate industry development plans (See Table 6). It created educational materials covering every aspect of dairy SCs, from grazing land management to farm quality-management systems. We call TetraPak's localization strategy "business ecosystem engineering."

Table 6 about here

Rapid industrialization of the Chinese dairy industry took place in the 90s, with TetraPak as the dominant packaging supplier. In the early 2000s, TetraPak coordinated with six ministry-level government entities to launch the School Milk Program, effectively putting milk into school diets as national policy. The Milk Program was also a strategic policy initiative of the government to elevate the quality and capabilities of key dairy producers in different regions. TetraPak provided financial support and technical expertise for the Program.

TetraPak's commercial success was not without challenges. Its business model was built on disposable packaging. Used cartons were not recycled because the composite materials had no economic value in the existing garbage collection systems. TetraPak worked aggressively to recruit garbage collectors and subsidize carton collection in several large cities. Meanwhile, it worked with a university and a small private firm to develop a down-cycled solution, turning recycled plastic into park benches. While the collection-recycling system was rudimentary, it was one of the first to tackle the growing challenge of waste resulting from rapid urbanization. The state legislature invited TetraPak to serve on its expert panel to draft the first national waste management law in China.

5. Findings

As intended by our sampling logic, modernity levels vary across the MNEs and their SCs. At first blush, we find that a wider "modernity gap" (see Figure 1) elicits more entrepreneurial behavior from MNEs and brings more radical changes to existing SCs. Of the four cases, TetraPak was best poised to take advantage of the opportunities presented by a stagnant, fragmented industry to create a very different SC architecture. Given a more open market and little technological leverage, Fairmont was limited to incremental improvement of existing operations. Nonetheless, SC localization was enabled by the MNE's institutional work to promote their agendas and seek support from influential actors. In this section, we report two major themes that emerged from cross-case analysis.

5.1 *Li-nian* and industry chain

Given our sampling criteria, it is no surprise that interviewees often mention sustainability as an integral part of their business model and values. From both interviews and secondary documents, we saw that the native institutional actors associate sustainability with two critical concepts: *li-nian* and *industry chain*. These two concepts have unique meaning in the context of Chinese culture and economic development.

Li-nian translates as "systemized thinking and ideas manifested in technology and management systems, supported by values and beliefs." The idea looms large in Chinese business culture. Western *li-nian* connotes modern ideas, advanced methods, and progressive thinking. It is to be learned and mastered for self-improvement and competitiveness at both firm and industry levels. "Learning the *li-nian* of the west" came up often in our interviews and industrial policy documents. Aside from the varied contents of *li-nian* specific to an MNE, anything that is con-

sidered *li-nian* provides a shared meaning of modernity, knowledge, a path to social progress. The veneration for learning and knowledge echoes Zilber's (2006) study of Israeli society, where technology is mythologized as a vehicle for national development and social progress. Similarly, learning is embedded in Confucian culture (Confucius, 1997). For Chinese institutional actors, faith in learning is cultural—deeply ingrained habits and dispositions that one possesses as part of one's life experiences (Bourdieu, 1994). One manager insightfully observed that some domestic institutional actors assume that any technology from the MNE is beneficial, until they figure out that they affect every player differently.

In our cases, sustainability is construed as *li-nian*. Thus, the business operations, management systems and technology of the MNEs are considered embodiments of social and environmental sustainability. Table 7 summarizes how interviewees associated sustainability with *li-nian* and their interpretation of what sustainability *li-lian* implies for SC operations and production practices. This association gives MNEs legitimacy and credibility, signaling that they have the technology and management systems to elevate their industries. A case in point is that LaFarge heavily promoted its environmental excellence by highlighting its worldwide ERP system. Granted, the ERP system can provide real-time environmental monitoring and reporting of its world-wide plants, but that is not why LaFarge invested in the system. The association of environmental excellence with advanced technology elevates sustainability as *li-nian*, a marker of world-class manufacturing which inspires Chinese domestic producers and policy-makers.

Table 7 about here

Domestic institutional actors assess an MNE's sustainability-oriented value propositions against their vision of their industry's future. This leads to a second critical concept, *industry chain,* that also consistently appears in our interviews and archival data. Initially we thought the

phrase "industry chain" was interchangeable with the familiar concept of SC. After multiple discussions with researchers and industry experts, we came to realize that it is a concept that originated in developmental economics. Unlike the concept of SC, where relational and material flows are conceptualized vis-à-vis a chain metaphor, industry chain concerns the design and architecture of the industry. It leads to the assessment of industry-wide assets and technologies, who controls which parts, industry governance and marketization of the industry, and more. The notion "smile curve" perhaps serves as a fitting illustration of the industry chain of the smart phone industry (Shih, 1996)—it shows how benefits are distributed throughout an industry, what a firm can do to move on the curve and correlates economic systems with value creation and value capture possibilities.

Our interviewees often analyzed and envisioned the future industry chain as they talked about the *li-nian* of a focal MNE. It suggests a constant comparison of the emerging SC against the conceptualized industry chain. This has two implications. First, in an iterative process of assessment and benchmarking, the actors theorize how the industry chain might evolve. In the meantime, the MNEs, as influential actors, inform the industry chain at any moment, thus influencing how domestic actors make the assessment.

Second, we see that government entities often have different interests from those of the domestic firms. In this iterative assessment process, a government entity might focus on a long-term objective for an industry sector, rather than the immediate economic interests of incumbent domestic firms, as shown in the Lafarge case. In the tacit market-for-technology exchange agreement, both the MNE and government entities are institutional entrepreneurs, acting to change a domestic industry.

5.2. Elements of a field

Leveraging key concepts of fields, we explain the institutional process of SC localization. This theory-elaboration leads to the SC field as a new construct in Section 5.3.

5.2.1 Institutional actors and strategic actions

Sustainability-oriented *li-nian* gives meaning and purpose to the MNEs' value propositions. It identifies institutional actors, defines their roles, and secures collaboration. Institutional actors (see Tables 3 through 6) include government entities at various levels and semi-government entities, including universities and trade associations. They enter the field at different phases of SC localization, which designates their roles. For Lafarge and TetraPak, ministries of the central government were involved in the early stages of localization; their overall participation diminished over time as the MNEs began to work more with lower-level government on routine localization operations. New actors may change the SC's direction (e.g., recyclers in TetraPak, Vanke in Lafarge).

One interesting observation from our cases is temporary role surrogacy—government entities may engage in commerce as suppliers or "third party service providers," while MNEs can play a part in governing. In the Nestlé, Lafarge and TetraPak cases, local governments and even ministries helped to identify prospective suppliers and coordinate supplier training. In the Fairmont case, the municipal government was the joint venture business partner. This echoes the observation made in several recent studies that as an industry undergoes change, external stakeholders (such as NGOs) interfere and take issues into their own hands (Gualandris and Klassen, 2017; Hyatt and Johnson, 2016; Webb et al., 2010). The MNEs, on the other hand, partake in rule-making and enforcement, thanks to their expertise and positions in the network of institutional actors. Specifically, both TetraPak and Lafarge became involved in drafting laws and

standards. Even more peculiar was the Ministry of Agriculture deputizing Nestlé to discourage counties from creating their own coffee brands. Such role-switching suggests that localization and institutional change are intertwined. SC localization enacts the *li-nian* of the MNEs, bearing new institutional content.

Paradoxically, collaboration is an act of rivalry. The MNEs act as agents of the government to modernize the industry chain, which, in turn, enhances the capabilities of domestic firms as they populate the emerging SCs. Nestlé created a coffee supply base in China beginning in the 1990s, but by the end of our data collection, other large coffee buyers, western and domestic, had set up operations in the region, making offers to coffee farmers. The company created the SC and gained primacy in the market. But as the industry sector grew, competitors appeared, and Nestlé could only cede part of that supply base and market.

5.2.2 Social skills

MNEs navigate between support and possible sanction from other institutional actors. They chart their courses based on sensitivity to the culture and deep understanding of the economic and political interests of other actors. Throughout our interviews, when managers from the MNEs spoke about collaboration, they cast themselves as both trustworthy businessmen and strategic partners providing technical expertise and assistance to advance the government's sustainability goals. In every case, the managers emphasized that they only play a supporting role, giving credit to the government entities. They also emphasized that support to a project happens only when the project is officially approved. For instance, at TetraPak, when we inquired about financial investment from the government on milk carton collection, one manager remarked, "if [government agencies] agreed to let you use their name... they have given you the resources." It

turned out that TetraPak had made significant multi-year financial investments in the program. They follow policy guidelines meticulously and stay behind the scenes.

We noted that all the senior managers of the MNEs are Chinese nationals with long work histories in government, state-owned enterprises or other MNEs in China. Interpreting the texts of the MNEs' news releases and media interviews, we sensed similarity in rhetoric and tone among our interviews, external data and government policy documents. Self-effacement and deference are appropriate decorum for subordinates in a hierarchical culture; they also help to avoid alienating Chinese competitors. Interviewees at Lafarge, for instance, said that the Cement Sustainability Initiative (CSI) could only claim to be an international trade group if the China Cement Association (CCA) joined. As a matchmaker between CSI and CCA, Lafarge is acutely cognizant that several large Chinese cement companies resist joining CSI, which requires disclosure of carbon emission data. While Lafarge emphasized the strategic reason to join, the managers know that CSI members would face emission standards.

MNEs try to assimilate by adopting the social behavior and norms of the host country and embed themselves among the actors in the power structure of the actor networks. To do so, they ally with the most influential actors (i.e., government). Here, blending in suggests a strategy of "behavioral isomorphism" to mitigate risks (Scherer, et al., 2013). Meanwhile, they determinedly seed change.

5.3 Defining SC fields

We have considered a few salient characteristics of fields that emerged from our cases; it is clear that an explicit definition of an SC field is important to foreground the institutional actors and understand their strategic actions. Analyses of "fields" in existing studies in organizational

and institutional studies do not cover SC fields as units of analysis. Thus, it is difficult to infer from these disciplines the scope or boundary of an SC field, or to specify its actors and their strategic actions concerning structuring the SC. Further, because fields are nested social orders, without an explicit definition, it is impossible to parse the institutional characteristics associated with each level of analysis. In order to build a mid-range theory, it is necessary to specify the field concept at the SC level. Building on the notion of the field and considering SC localization as a process of institutional change, we define a supply chain field as

> *the strategic arena in which a focal firm frames and promulgates its product, production technology, management systems and business model as goal- or issue-driven value propositions. The goal or issue identifies institutional actors and mobilizes them to collaborate in building an end-to-end SC in the host country.*

TetraPak's SC field is depicted in Figure 3. Recent studies have used such conceptual drawings to illustrate theoretical insights (cf. Carter et al., 2015; Gualandris and Klassen, 2017). While it does not capture all institutional actors as nodes nor the ties among them, it reveals that TetraPak actively seeks out partners, creating the network in which it occupies a central position. It also shows that only three actors, depicted by the solid black box, constitute the traditional SC of physical materials flow. Clearly, institutional work takes place beyond the activities of creating the physical SC. Localization *is* institutional change.

Figure 3 about here

5.4. Changing institutional characteristics of the SC field

Localized SCs elicit changes in the institutional characteristics of the SC field and in some cases, the industry sector (the larger field in which it operates). SC localization is a process

of knowledge transfer and learning. This process also impinges on the cognitive, normative and regulative institutional elements that structure the SC field. Across the cases, sustainability-based *li-nian,* while operationalized differently, presents a new way of conceiving production and production systems and the value propositions of businesses and their SCs. Such cognitive change is subtle—it takes place within individual actors, yet its effect is collective—at the SC field level, actors share an understanding of the *li-nian*.

Further, the shift toward a higher level of marketization and industrialization as a result of localization leads to more sophisticated production systems, and adoption of new laws and standards. Here, laws are the essential regulative institutional element. Regulatory and voluntary standards and membership in industry associations (e.g., CSI in Lafarge) are normative systems that set behavioral expectations (Scott, 2014, 60). Adoption of laws, standards and certification in turn elicit rapid change in SCs. Nestlé, for instance, leveraged the new Chinese cooperative laws to restructure its supply base by contracting with cooperative-based supply units, which also induced new relational norms among the suppliers. In the case of TetraPak, the imminent recycling mandate forced the company to scramble and assemble a "recycling system" on the fly. These observations offer two insights. First, localization involves the gradual expansion of an SC, which is punctuated by rapid structural change due to such external shocks as implementation of new laws and regulations (Gersick, 1991). Second, SC structure and institutional change influence one another, which we will further theorize in Section 6.

Our analysis of the bottom-up effect of institutional change is tentative. A systematic understanding of this mechanism will require interpretation and measurement through a multi-level longitudinal study. Nonetheless, our cases offer evidence of cognitive and normative "mutation" among institutions and actors. In the TetraPak case, for instance, none of the farms that went

through the company's Milk Program training was implicated in the national milk scandal (though some of its other customers were.) We surmise that product tampering would have violated the new professional pride of managers who had begun to view milk quality from the perspectives of animal health, sanitation and cold chain coordination. One can imagine the cognitive dissonance had these managers been instructed to adulterate their product with melamine in the last step of operations—their work had acquired deeper meaning. Table 8 describes the changing institutional characteristics of the SC field. The characteristics of the SC field before and after localization highlight the explicit changes in the normative and regulative elements and in the implicit cognitive elements that characterize the field.

Table 8 about here

6. Propositions

In this section, we explicate the meso-level theory of SC localization. We take stock of the findings that emerged in Section 5 and new constructs (the second-order themes) to answer the two questions of this study. Theorizing the connections among the second-order themes elicits its aggregate dimensions (Gioia et al., 2013) and eventually leads to a process model of SC localization and institutional change. We provide propositions to highlight the key theoretical insights.

SC localization starts with an MNE convincing domestic institutional actors that it offers a benefit. An MNE employs cultural resources to legitimize its value propositions. In our cases, the MNEs use sustainability to frame their practices, technologies and management systems and link sustainability with *li-nian*, which resonates deeply with taken-for-granted cultural values. At the same time, an MNE signals its commitment as a partner through knowledge diffusion (e.g.,

training, joint R&D, etc.). Along with their practical utility in supplier development, education and learning are symbols. In this sense, legitimatizing a value proposition is a cultural task. As DiMaggio (1990, 113-115) points out, culture provides tool kits of strategies and problem-solving routines.

Domestic actors, on the other hand, assess the MNE and its value propositions against what they see as the future of the industry chain—as well as their positions in it. The MNEs, as industry leaders, present new forms of the industry chain to domestic actors. The industrialized dairy production system (TetraPak) and servitization of green building materials (Lafarge) are examples. The MNEs actively influence how domestic actors conceive the industry chain. Here we see a feedback loop—domestic institutional actors' legitimization of an MNE's value proposition leads to conceptualizing (and receptivity to) an altered industry chain; such conceptualization in turn becomes a criterion in assessing the MNE's value propositions The MNE's *li-nian* influences and is influenced by how the actors see the future of their industry. We call the interactive processes of conceptualizing the industry chain and legitimizing the MNE's value proposition the "ideation of new operations practices."

P1: An MNE's framing of sustainability-oriented value propositions reveals institutional voids. Its knowledge-diffusion initiatives through educational programs and joint R&D signal commitment to institutional actors in the host country. Such initiatives give the MNE credibility among institutional actors.

P1a: Ideation of new operations practices is an interactive process in which conceptualization of the industry chain and interpretation of the MNE's strategic actions influence one another.

P1b: The MNE's ability to translate and incorporate the broad cultural meanings of the society facilitates legitimization of new operations practices.

Ideation of new operations practices is the process of sense-making that takes place at individual, organizational and SC-field levels. It is ongoing because the conception of the industry chain is always updated and new operations practices come to the fore as the SC emerges. Ideation creates shared meaning among institutional actors, sets their agendas, and specifies their economic and political interests, roles and tasks. It initiates collaboration among actors in SC operations. An MNE leverages the resources of domestic actors, who provide access to suppliers, customers, and physical infrastructure. The MNE resorts to these actors to execute SC operations. While SC localization is strategic, the resulting SC is not deterministic; the eventual SC is contingent on the social skills of the MNE and its ability to leverage other actors and market opportunities. MNEs' social skills vary, as do opportunities. An MNE takes advantage of the existing infrastructure (e.g. suppliers, physical assets) and makes do with constraints. Thus SC localization involves spontaneous structuring. The choice of new collaborators and operations practices also reorganizes power relationships among institutional actors in the field.

An MNE's strategic actions induce bottom-up institutional change at the field level (Table 8). The adoption of standards, certifications and market-oriented practices and governance by the MNE and its suppliers and customers sets new norms. It introduces new cognitive schemata, which collectively constitute the new institutional elements that characterize the SC field (Scott, 1994). On the other hand, these institutional elements regulate and inform SC operations. Over time, the actors draw upon institutional elements as resources to conceive and execute operations practices. For instance, in Lafarge, sustainability as cognitive schema is operationalized as clean

production in the beginning and later on as a solution for energy efficiency in building materials. Here, a feedback-loop demonstrates a generative process of structuration (Giddens, 1984).

P2: Ideation of an MNE's operations practices is an intuitional task that elicits structuring the SC and the SC field.

P2a: Continuous ideation predicates changing cognition among institutional actors, which guides structuring the SC and the SC field.

P2b: SC localization and SC field construction interact. The emerging SC modifies the institutional elements of the SC field, which in turn provide the rules, logic and scripts for strategic actions. Thus the SC field is both the outcome of SC localization and the medium that enables it.

This intuitional process of SC localization is depicted in Figure 4. Ideation of operations practices precedes the structuring of the SC and the SC field. Ideation and structuring constitute a feedback loop that describes the cognitive process of conceptualizing, evaluating and ultimately accepting the MNE's value propositions. This feedback loop suggests that material practices (i.e., SC operations) and the institutional infrastructure (as a configuration of the three institutional pillars) inform and reproduce one another.

Figure 4 about here

7. Discussion

Our longitudinal study makes two theoretical contributions. First, this study answers recent calls for re-conceptualizing SCs by expanding the boundary of SCs and identifying government-sponsored institutions and non-government organizations (among others) as SC members that play crucial roles in supporting SC operations, shaping SC tasks and delivering change (Carter et al., 2015; Gualandris and Klassen, 2017; Hyatt and Johnson, 2016; Spring, et al., 2017;

Wood and Wright, 2015). In the meantime, our study takes the next incremental step by developing a mid-range theory of SC fields. It provides the language and theoretical lens to explain the collective behavior that enables fundamental change to an SC. Situating SCs in nested institutional systems, we delineate the elements of SC fields and identify culture-specific constructs (i.e., *li-nian* and industry chain) and their relationships to explain the institutional process of legitimization prior to SC localization. By illuminating the institutional process that parallels SC formation, our study contributes to the literature by unveiling the institutional work and institutional changes requisite for SC localization.

Second, as a meso-level theory, our analysis provides a more contextualized understanding of institutional dynamics at the SC level. Scholars have examined institutional and social change using "industry" as the unit of analysis (e.g., Weber, et al., 2008); this study is among the first to focus on the SC as the unit of analysis to make sense of institutional processes at the firm, SC and field levels. Ultimately, it offers a rich understanding of system change through a multi-level analytical perspective.

The theory of SC fields has practical implication as well. It asserts that institutional work is an integral part of SC management and localization. This broadens what we traditionally consider SC tasks and the skills they require. More specifically, in SC localization, seemingly technical tasks have institutional significance to multiple actors in the emerging economy. SC managers must be able to carry out institutional work—framing operations tasks and identifying actors who can execute them. Therefore, the social skills of operations managers go beyond managing suppliers or customer relationships in transactions; they require institutional entrepreneurship to mobilize and bring change to existing social-technical systems.

Our study has limitations that point to unanswered questions. First, we recognize that the influential institutional actors in our cases are largely government and semi-government entities. Absent from these cases are such actors as NGOs and community advocacy groups. The research setting probably explains these absences, but such groups may bring profound institutional change to an industry or a profession (Greenwood et al., 2002; Ingram and Rao, 2004) in other settings. Future research should include these important institutional actors in research design. We surmise that MNEs, working with competing institutional actors (e.g., government entities and NGOs), would need different social skills.

Second, because systematic understanding of institutional change at the SC-field level is new, one basic yet crucial step is to establish constructs with conceptual clarity and normative validity at the field level. For instance, we touched on the fact that introduction of market logic brings new cognitive ingredients to the institutional actors. However, we did not systematically examine what the cognitive (and normative) elements are at the SC-field level. While we rely on institutional elements at a higher levels of analysis (e.g., country) to describe the institutional infrastructure of an SC field, future research must identify and define constructs at the SC-field level to describe the institutional characteristics and carry out institutional analysis.

Third, a deeper understanding of a given SC field would require we analyze an SC field as a network of actors. Network structure functions as the skeleton of a field and networks carry institutional effects. While in this study we made inference regarding MNEs embedding themselves in existing power structures (through behavioral isomorphism) and forming direct and indirect ties, a systematic analysis of the network structure, its evolution and the actors' positions in the network would reveal categories of actors and the hierarchy that defines an SC field and its efficacy (Owen-Smith and Powell, 2008).

Lastly, we identified *li-nian* and industry chain as critical constructs to understand cognitive content and activities. The deep meanings of these two constructs are understood through the lenses of the modern Chinese economy and traditional Chinese culture. More specifically, while the technical content of *li-nian* may be a novel concept, one can understand why *li-nian* would be accepted and adopted by appreciating the Confucian respect for learning. It explains the drive to understand, analyze and interpret institutional dynamics by adopting the language and thought processes of other institutional actors. Institutional analysis of SC fields will be more fruitful and richer when researchers look deeper into the cultures in which such fields are embedded.

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APPENDIX. INTERVIEW PROTOCOL*

1. Explain the research objective and scope. Obtain titles and responsibilities of interviewees, and basic information. Include localization background: identify focal products associated with the SC localization. Request contact information of various institutional actors.

2. Describe the relationship between corporate strategy, local (subsidiary) strategy in the context of SC operations. Describe the interactions between headquarter and Chinese subsidiary in terms of support, structure, joint activities, local autonomy.

3. Describe the history of SC localization and evolution of the SC. Be specific in different operations areas including supply/supplier management, sourcing, supplier development, production operations, distribution, marketing, customer relationship management and innovation/R&D, etc.

4. Describe environmental and social sustainability initiatives associated with the areas above. Use specific examples and describe challenges, solutions and outcome.

5. Describe the involvement and activities of stakeholders/institutional actors in different operations areas listed in #3 above. Describe how the focal MNE mobilizes these stakeholders/institutional actors and their interactions as political actions.

6. Describe the performance (economic, environmental and social) outcome for the MNE and the suppliers as a result of SC localization.

7. Describe the cognitive and normative changes of institutional actors (e.g., government entities, semi-government entities, NGOs) and SC members (e.g., suppliers, distributors) as results of the SC localization.

8. Describe institutional changes, along the dimensions of three institutional pillars (cognitive, normative, and regulative), in the industry sector as a result of SC localization.

* These eight statements summarize the topic areas of inquiry. Interviewees were often asked multiple open-ended questions on each topic area so that we attain richer and contextualized understanding on that topic area. The interview questions are customized and adapted in each interview based on what we have learned about a company, the situation and the role of the interviewee.

Table(s)

Table 1: Profile of the sampled MNEs*

	Tetra Pak	**Lafarge**	**Nestlé**	**Fairmont Hotel**
Revenue (global)	$1.244B**	$8.88B**	$89B	$1.3B
Revenue in China	$188.12M	$1.78B	$6.6B	$100M
Net Profit margin	18%	4%	7%	6%
Employment in China	1,500	8,000	50,000***	3,000

*2015 data is reported in this table.
** Euro is converted to US Dollars (1Euro=1.05USD) using exchange rate from Dec. 26, 2016.
*** The large size is due to diversified food business portfolio of Nestlé in China.

Table 2: Summary of interviews

Cases	Names of the Firms & Organizations	Interviewee's Job Title	No. of Interviews
Fairmont	Fairmont Beijing Office	General Manager	3
		Director, Food and beverage/Executive chef	2
		Director, Engineering	2
		Director, Sales and marketing	1
		Director, Housekeeping	1
		Assistant director, Rooms	1
		Human resources manager	1
	Fairmont Yangcheng Lake Office	General Manager	1
		Executive chef	1
		Director of recreation	1
		Manager, Learning & development	1
			Total 15
Lafarge	Lafarge China HQ, Beijing	VP, Environment and public affairs	3
		VP, Corporate communication	2
		VP, Aggregates & Concrete Products, Vanke partnership manager	1
	Lafarge China, Chongqing office	Green Chongqing program manager, Marketing director	2
		General Manager, Nanshan plant, Chongqing	2
		Product development manager	1
		Promotion supervisor, Marketing department	1
		Construction Engineer, Construction Development Lab	1
	China Cement Association	Secretary general	1
			Total 14

Nestlé	Nestlé China	VP, Corporate affairs	2
		Agricultural service manager	1
		Purchasing executive	2
		Warehouse operator	1
		Technical assistance executive	2
	Pu'er government	Director, Pu'er city coffee office	1
	Pu'er Tea & Coffee Association	Director	1
	Golden Tree (coffee processor)	General Manager, Golden Tree	1
	Individual farmers	Farmer Wang	1
		Farmer Zhang	1
			Total 13

TetraPak	TetraPak-China	Director, Government relations & environmental management	TetraPak Beijing (BJ) office	1
		School Milk program manager	Hohhot city, Inner Mongolia; TetraPak BJ office	2
		VP, Corporate communication	TetraPak Shanghai office	2
		VP, SC management	As above	1
		Senior environmental engineer	As above	1
		Senior communication executive	As above	1
	Dairy Association	Director, Dairy Association of Inner Mongolia	Hohhot city, Inner Mongolia	1
		Deputy secretary general, China Dairy Association	Ministry of Agriculture, BJ	1
	China Agriculture University	Chief Scientist of National Modern Dairy Industry, Professor in animal nutrition	China Agriculture University, BJ	1
	China Packaging Federation	Assistant Secretary General	China Packaging Association, BJ	1
	Green World Waste Management Co.	General Manager/owner	TetraPak Shanghai office	1
	Linpai Environmental Technology (recycler)	General Manager/owner	As above	1
	Xin Hong Peng Paper Co. (recycler)	General Manager/owner	China Packaging Federation, BJ	1
				Total 15

Table 3: Fairmont: Engaging institutional actors in SC localization

Institutional Actors	Projects & Activities associated with Localization	Strategic Implications for Fairmont
***Upstream*:** Kunshan City Construction Investment Development (KCCID) '09	KCCID, a state-owned enterprise, supplies lakefront real estate to Fairmont-YC as joint venture partner to build the hotel and eco-districts. It also owns the vegetable farm. Fairmont works with KCCID on various eco-restoration projects such as cleaning up local waterways.	Having local government as business partner provides land resource and access to local farms.
Regional vegetable farms '10	Local sourcing and introducing new organic vegetable variety to local growers.	Enabling expansion of regional product supplies. Community economic development.
Downstream: KCCID'09	Handling food wastes for compost. Lake conservation/restoration Developing organic vegetable producers.	Integrating environmental practices into core service value proposition (i.e., expansion of eco-tourism categories). Community development as part of business activities and putting down roots to make a place home.

Table 4: Lafarge: Engaging institutional actors in SC localization

Institutional Actors	Projects & Activities associated with Localization	Strategic Implications for Lafarge
Upstream: Du Jiang Yan Construction & Materials Ltd. '99; Chongqing Cement Plant '99; Sichuan Double Horse Group '03; Hong He Cement Company '10	Lafarge formed JV or acquired state-owned enterprises. Closing down some heavy-polluting cement factories after acquisition, and retrofitting the rest. Paying pensions to laid-off workers.	Gaining access to production resources (limestone mines).
Tang Jia Tuo Sewage Treatment Plant, Hechuan Power Generation Plant, Chonqging Steel Group '08	Green production—using city sludge, fly ash and steel slag as cement production material or fuel.	Adaptation of existing production process to use local materials; promoting environmental practices.
Greening Chongqing Initiatives '10: Chongqing Municipal Government; Chongqing University '10	Alliance agreements to design new products suitable for regional government infrastructure projects.	Gaining access to government contracts; R&D collaboration with university enhances legitimacy.
Downstream: China Cement Association (CCA), Ministry of Environment (MEP) '94,	Lafarge engaged with major Chinese cement producers through CCA. Specific activities: health & safety training; quarry rehabilitation; promoting low-carbon cement as industry standard; setting industry standards with the MEP.	Involved in the formulation of cement industry policy concerning regulation on carbon emission and green production.
Cement Sustainability Initiative	Lafarge served as liaison to introduce Chinese cement producers to join CCI.	Bringing Chinese producers to the international professional trade organization, exposing them to carbon emission standard.
Greening Chongqing Initiatives '10: City Architectural Design Institute; Chongqing University'10	Lafarge's CEO appointed the Acting Chairman for the International Economic Advisory Committee to the city mayor. Lafarge advises and works with general contractors, university, and the Institute to promote green products to the government.	Forming alliance with key government institutional actors; influencing industry standards. Gaining access to public construction projects and building markets.
Vanke '13	Forming a JV with this largest real estate developer in China to develop new products and solutions including thermal insulation system, energy efficient building materials and low-pollution. construction work flow.	Business expansion into residential real estate markets. SC evolution and expansion.

Table 5: Nestlé: Engaging institutional actors in SC localization

Institutional Actors	Projects & Activities associated with Localization	Strategic Implications for Nestlé
Upstream: Pu'er City Gov. '89	Nestlé invested in training 5000 farmers, technicians and agronomists/year. Pu'er City provided free land to build an experimental farm and "Coffee Center" ('13) and allowed Nestlé to use national grain storage facility for its logistics operations.	Joint supplier development with the local government. Gaining access to prospective coffee farmers and logistics support from the government.
Coffee Association of Pu'er (CAP) '03	CAP, a semi-government organization, is a platform to promote Nestlé coffee standards.	Attaining legitimacy.
Supply & Marketing Cooperatives (SMC) '89; Farmer Groups '11; Specialized Farmers' Cooperatives (SFC) '12	Nestlé adapts to evolving forms of production cooperatives to organize its supply base.	The city government becomes directly involved in supply management for Nestle through its administration of cooperatives.
Pu'er Tropical Plant Institute '04	Training coffee cultivation technicians, conducting coffee-related horticultural research.	Leverage resources from the government in propagating new technology and supplier development. Knowledge transfer facilitates alliance formation.
Ministry of Agriculture (MOA) '11	Nestlé, on behalf of MOA, resolves MOA's disagreement with local government.	Influencing policy and involvement in governing activities.
4C (Common Code for the Coffee Community Association) '11	Implementing environmental certification.	Standard sets entry barrier and secures suppliers in addition to achieving gains in environmental performance.
Downstream: China Beverage Industry Association (CBIA) '09	Nestlé holds a coffee and health forum for beverage producers, nutrition experts and research institute.	Promoting industry interests. Gaining institutional legitimacy.

Table 6: TetraPak: Engaging institutional actors in SC localization

Institutional Actors	Projects & Activities associated with Localization	Strategic Implications for TetraPak
Upstream: China-Sweden Dairy Products Training Center '85	The Chinese partner of the Center is Bureau of Rangeland within the Ministry of Agriculture (MOA). The Center trained more than 4K technicians in dairy companies. TetraPak helped to formulate national dairy industry development plan.	Nurturing relationships with key agencies and prospective dairy producers and customers. Involvement in policy making and legislation.
China Diary Association (CDA) est. '85	TetraPak funded CDA (affiliated with MOA) to train dairy farm managers in 18 provinces.	Leveraging CDA to carry out supplier/dairy farmer development tasks and identify customers.
WWF & China National Forestry Administration (NFA) '07	Funded by TetraPak, WWF and NFA identified a private forest company to be FSC-certified, setting example for future Chinese paper material suppliers.	Gaining institutional legitimacy. Community development tied to business plans.
Renmin University-TetraPak Research Center est. '08	Joint research on national dairy industry policy in areas such as farm management, dairy cow feeding program and grassland management, milk quality management. 101 dairy farms were certified between '05 & '12.	Serving as the research arm of the government to influence industry policy. Building alliances with government entities.
National School Milk Program Office (Milk Office) est. '00	Milk Office reports to MOA. Coordinated by TetraPak, an initiative of eight ministries and agencies established "Milk Program" in primary and middle schools.	Leveraging government entities to carry SC operations. Establishing more advanced dairy SCs and farm management programs to serve the program.
Downstream: Circular Economy Committee of China Packaging Association (CPA) '05	TetraPak invited by CPA to draft National Circular Economy Law, which was enacted in '09. CPA commissioned by National Reform & Development Commission (NRDC), an affiliate of the State Council.	Becoming involved in legislation.
Green World Waste Management Co., Linpai Environmental Technology; Xin Hong Peng Paper Co. '05	TetraPak engages directly in waste carton collection and recycling in three largest metropolitan areas in China.	Developing recycling infrastructure, previously non-existent in China
Shandong Tianyi Plastic Co. Ltd. Shangdong Liaochen University '04-09	Recycling technology development. Providing polyAl de-lamination equipment to recyclers.	Creating path-dependent and adaptive SC in waste management.

Table 7. Sustainability conceived as *li-nian* and its translation into SC & operations practices

Cases	Sustainability Conceived as *Li-nian*	Translated into SC & Operations Practices
Fairmont	*As an industry leader, Fairmont pays attention to its contribution to the society. Environmental protection as a li-nian guides our operations*.*	Energy efficiency initiatives in hotel operations. Sourcing from community-supported agriculture (CSA), and develop organic farmers. Incorporating the notion of 'environment and ecology" in eco-tourism offerings in such areas as cuisine, folk culture program, Kids Discovery Program.
Nestlé	*Creating shared value.*	Eliminate intermediary and provide coffee market pricing information to farmers. Provide training to farmers and develop coffee-based economy for the region. Ultimately eliminate poverty in the region. *[Nestlé] becoming a family member of the community.*
	*Developing green economy.**	*While we have achieved volume/acreage and quality goals, we are weak in the downstream supply chain: logistics, processing and branding. We need to develop China's coffee exchange in Pu'er.***
Lafarge	*Technology is the path to development. Pollution prevention is the path to survival.**	Leveraging technological strength -- Global integrated IT system and intelligent management system to control and monitor plant energy efficiency. Investing in environmental protection awareness. Scientific management and developing ways to improve resource efficiency in such areas as carbon emission reduction, waste management & revegetation of mining area.
	Competition among peers should not be limited to profit, it should include corporate social responsibility.	Promoting environmental management system, industrial production management, work safety management to the entire cement industry in China.
TetraPak	*[TetraPak] packaging practices represents the li-nian of environmental protection.*	Developing collection recycling system and material reuse technology. Creating a circular economy. *Composite packaging materials are considered waste by garbage collectors, it is our social responsibility to collaborate and figure out how to recycle them.*
	As a responsible corporate citizen, we take on the responsibility to push for sustainable development of the industry chain.	*By working with forest owner, we maintain/promote sustainability development from the beginning of the supply chain, only in this way, the sector would have a future of healthy development. Helping a forest owner to get FSC certification a public service. Public service is sustainable only if it benefits our business development.*
	We grow with the dairy industry of China. Every year we do things to give back to the community.	Enhancing the capability of dairy farmers in terms of business management, quality management, quality system implementation and ecologically sound land management.

*Italicized sentences are direct quotes from our interviews.
** This statement is from a domestic institutional actor. (All other quotes are from the MNEs).

Table 8. Changing institutional characteristics of the SC field

Cases	Characteristics of SC Field before Localization	Characteristics of SC Field after Localization	Institutional Implications
Fairmont	Cultural tourism traditionally is about scenery, folklore and cultural heritage.	Cultural tourism now incorporates the concept of eco-tourism, highlighting local ecological issues, education, conservation, linking local food with ecosystem protection.	Cognitive: Fairmont promulgates the notion of eco-tourism as a new service category to actors of the field and the hospitality industry in China.
	Hotel operations play only a small role in service offerings.	Environmental awareness becomes a central part of operations & customer experience.	Normative: Energy-efficiency practices are adopted as standard operation procedures.
Nestlé	Limited coordination among farmers; agrarian rural life.	Adoption of environmental certification & quality standard by coffee producers.	Normative: Standards/certification set behavioral expectation.
	Government-run farm collectives & sales co-ops provide sales channel and production coordination.	Producers direct participation in market. Higher level of coordination among farmers and with the buyer through Nestlé and the new form of rural co-op.	Cognitive: Transitioning from agrarian agriculture to industrialized agriculture; Community-based economic development is formalized/recognized as sustainable development.
Lafarge	State-owned enterprises with little competition.	Adoption of clean production systems and environmental standards and membership in international professional organization.	Normative: Standards/certification set behavioral expectation.
	Outdated production technology & management systems resulting in inefficiency and serious environmental impact.	Reduced protection of state-owned enterprises, higher level of market competition; more entrepreneurial and innovative business development.	Cognitive: Marketization. Servitization becomes business model & solution to environmental challenge/opportunities.
TetraPak	Small-scale local dairy production & distribution.	Large-scale industrial dairy SCs. Integration of sustainability and corporate citizenship into business development.	Cognitive: Industrialization of the dairy SC; The meaning and model of sustainability are defined and introduced to the field and the industry sector at large. Sustainability has become a central issue of the industry.
	Sustainability is not an issue or agenda.	Adoption of standards, certification of quality and environmental management.	Normative & regulative: Standards/certification set expectation of behavior.
		Adoption of National Circular Economy Law.	Regulative: Law sanctions behavior.

Figure(s)

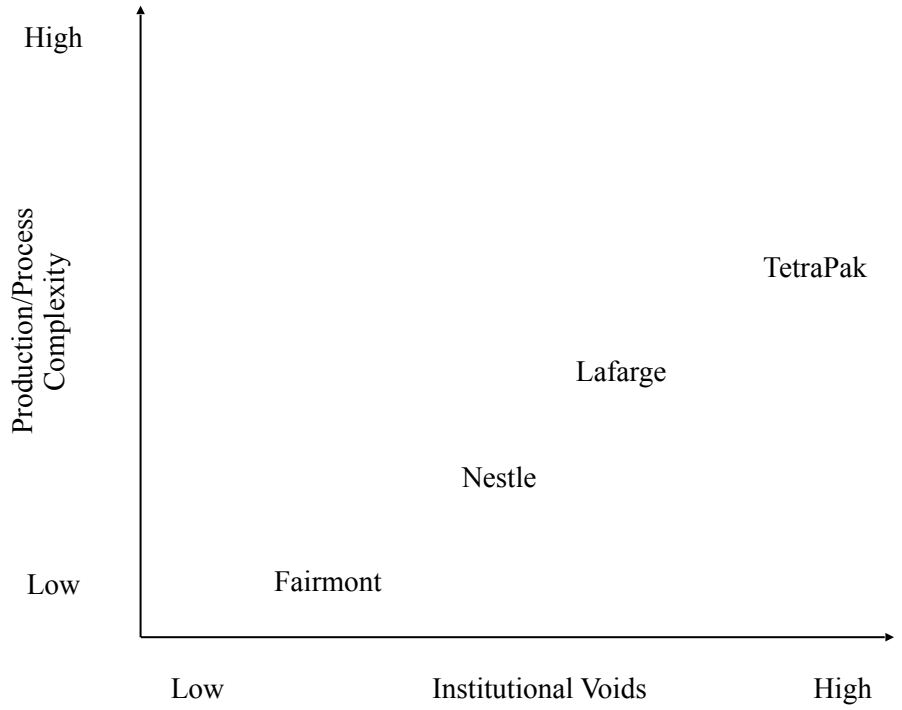

Figure 1: Sampling Logic — Two Dimensions of Modernity

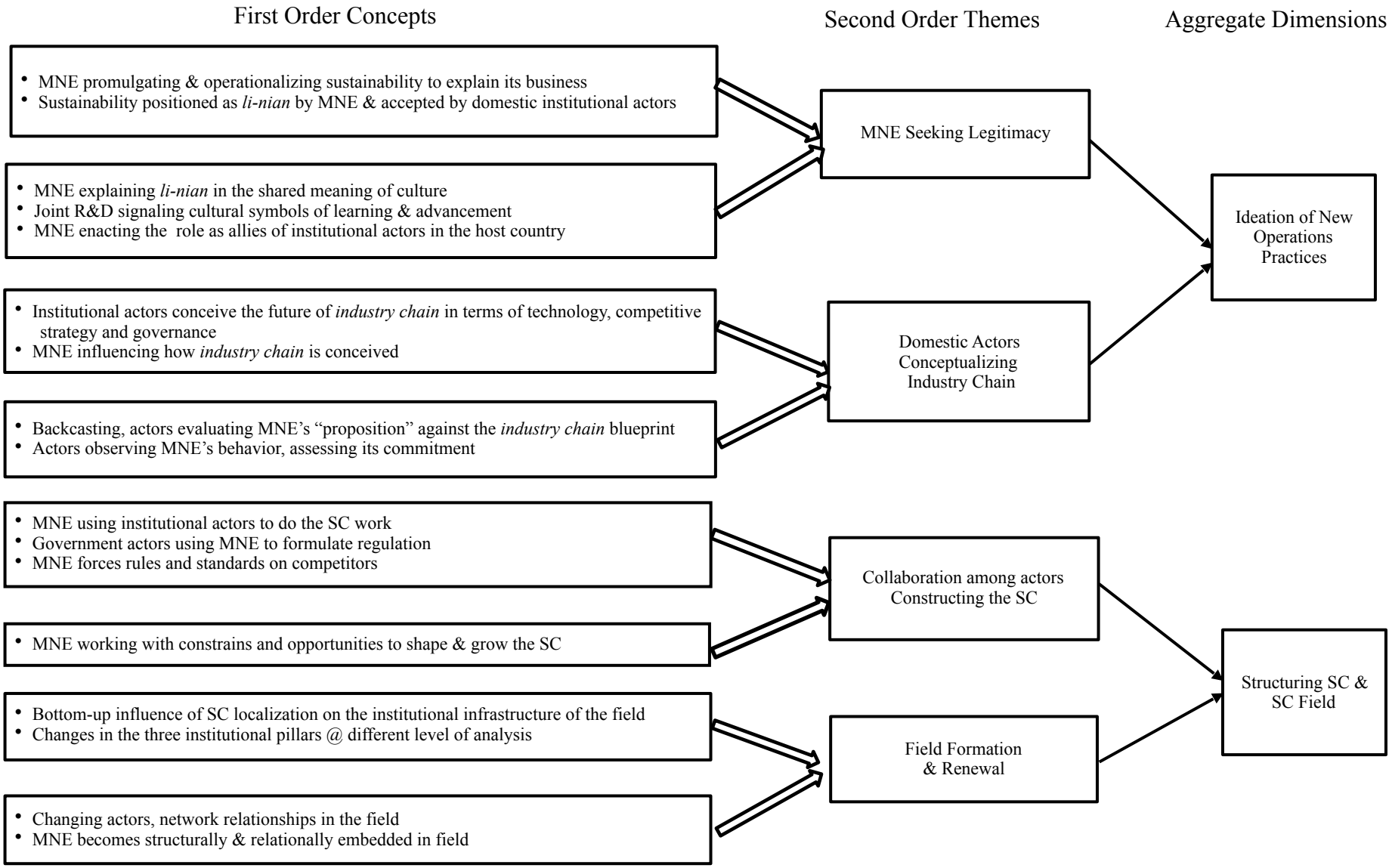

Figure 2: Data Structure

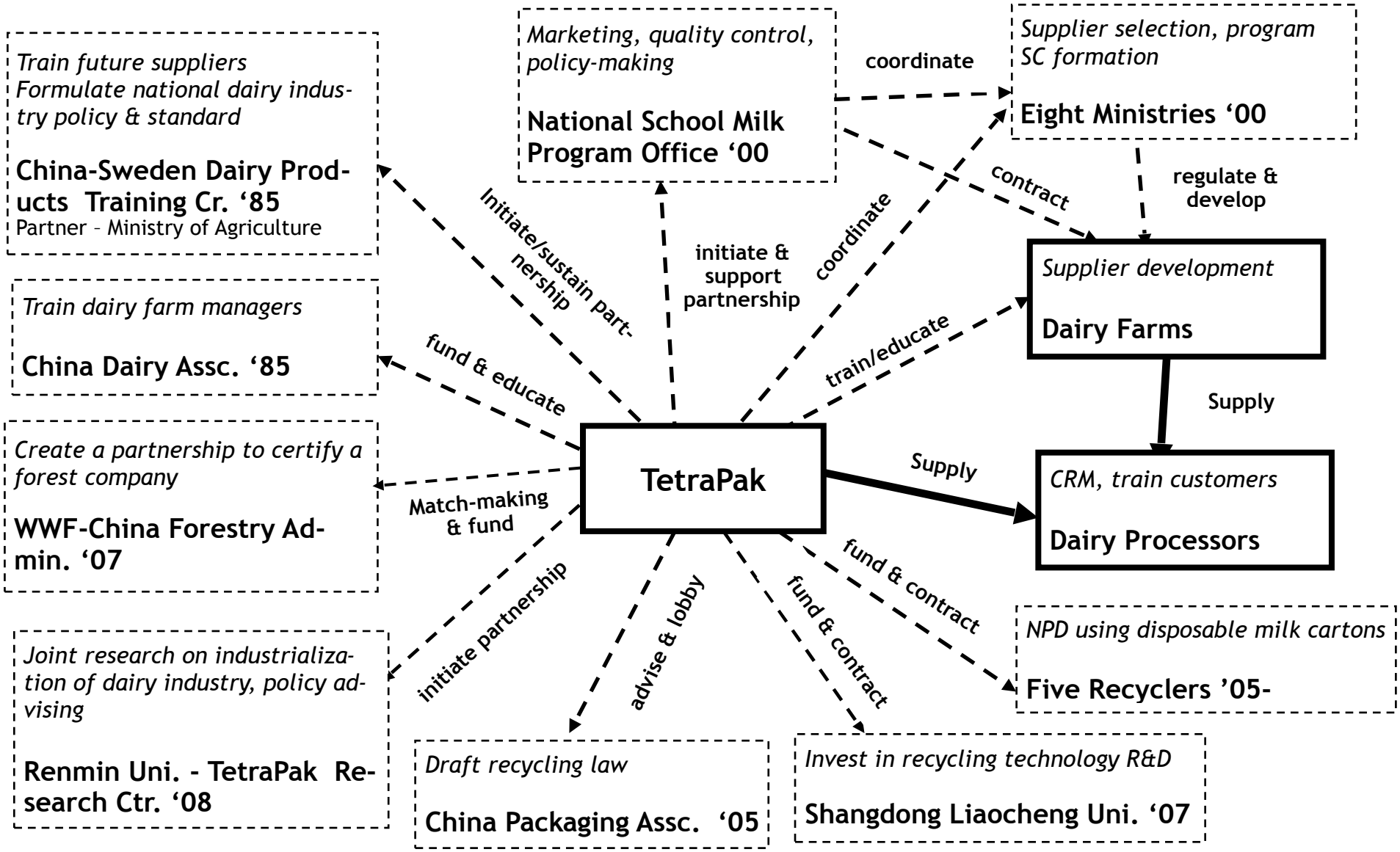

Figure 3: An Illustration of the Supply Chain Field in Which TetraPak is Embedded

Note: The dotted & solid boxes represent institutional actors. The solid box are actors/supply chain members through which products physically flow. The dotted arrows present non-production activities and solid narrow represent material flows.

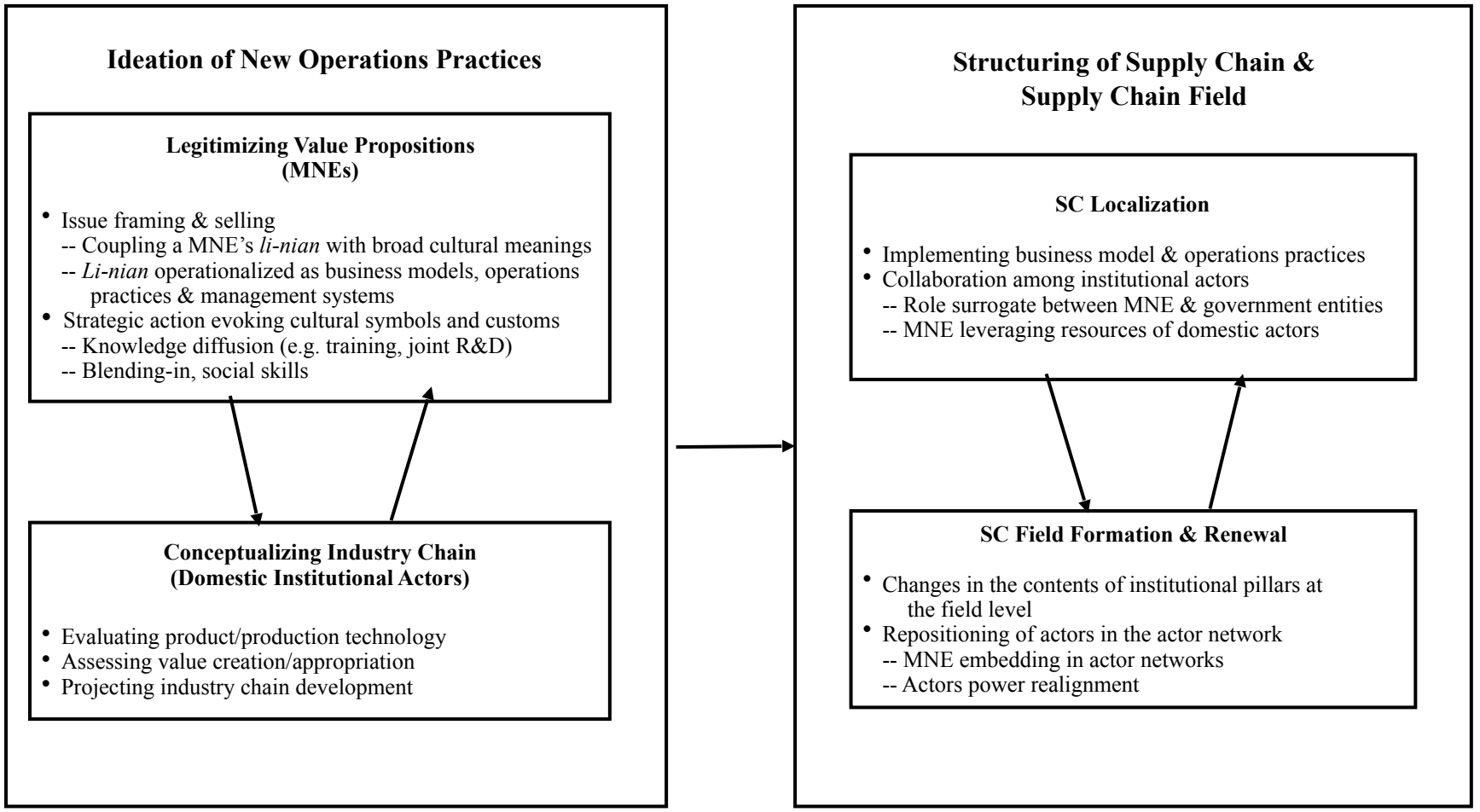

Figure 4: The Institutional Process of Supply Chain Localization