

BUILDING AN ANALYTICAL FRAMEWORK FOR THE STUDY OF EMERGING COUNTRY MULTINATIONALS' OPERATIONS MANAGEMENT

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Abstract

International Operations Management (IOM) is still an overlooked field of research, partly because international production occurs inside a single organization: the multinational enterprise (MNE). This results in IOM to be approached as if the only distinction between domestic and foreign operations is logistics. However, within the MNE, IOM comprises a much more complex set of decisions and procedures. This paper aims at establishing an analytical framework for the study of IOM in MNEs from emerging countries, considering the enterprise as: a) a network of subsidiaries; b) part of global production networks (GPN); and c) a network of competences and capabilities. The focus is IOM in the context of the subsidiaries' network. To achieve that aim, this paper drew from different disciplines, especially International Business, Strategy, Global Value Chains and GPN. The analytical framework was built from three approaches that look at different dimensions of the MNE. The final outcome includes the constructs to be utilized in future empirical research.

Keywords

Internationalization, international operations management, value chain configuration, emerging country multinationals.

1 INTRODUCTION

As latecomers in international markets, emerging firms from emerging countries (EMEC) have had to rapidly evolve their manufacturing system concepts, from a focus on national, stand-alone factories towards a global, corporate network of factories. This opens the possibility of new research streams looking at international operations management in terms of structural architecture, dynamic mechanisms, and related strategic capabilities and processes [1].

At first, the expansion of EMECs was unpredicted, because they are usually seen as mature and verticalized firms that grew in home markets protected from global competition [2]. Thus, they would not possess advanced technological and managerial competences needed to create ownership advantages to explore abroad [3]. Notwithstanding, they are expanding internationally, with manufacturing competences playing an important role in that process [4].

The way in which international operations are managed is still poorly understood, even for developed country multinationals: "despite the importance attached to it by both academics and practitioners, the field of International Operations Management (IOM) is still at a relatively early stage of theory development" [5]. More recently, some branches of IOM became hot issues: global value chain management, international sourcing and procurement, supply chain management [6] [7]. However, a more integrative approach to IOM is still missing, being that gap even bigger for EMECs [8]. The main objective of this paper is to propose a structured approach to cover that gap.

International production and operations management deals with production of goods and services in international locations and markets. It involves management processes

which have to take into consideration local production market (labor and capital) and international customer requirements. It involves the establishment of subsidiaries, the setting of their roles [9] and the management of the network as a whole.

The aim of this paper is the development of an analytical framework to be applied in IOM research addressing the distinct dimensions of the issue. The discussion and assessment of frameworks is relevant because both academic debate and managerial practices are based on frameworks, whether explicitly or implicitly. Moreover, since every analytical framework is derived from a theoretical approach, implicitly there is a choice of theory and the paradigm that "lies behind".

The framework will be used for the study of cases of EMECs, and was built in two stages. The first stage concerns a literature review aiming to highlight the main concepts involved: multinational enterprise, global production networks, internal and external networks, subsidiary role. The second stage looks at three partial frameworks that were already published in the literature, aiming to extract constructs and relationships needed for building the analytical framework.

2 LITERATURE REVIEW

Currently, three perspectives rule the analyses of international operations: a) the multinational as a network of subsidiaries; b) the multinational as part of global production networks; and c) the multinational as a network of competences.

2.1 The multinational as a network of subsidiaries

In the early years of the multinationals, international operations was not a relevant issue for management. Actually, pioneering multinationals had their international

operations under the responsibility of some International Department, a box in their hierarchical structures.

The strategic character of internationalization was gradually unfolded after World War II. However, it was the disciplines of Strategy and International Business, rather than International Operations, the ones that first became focused on the issue of internationalization.

It was only in the 1980s and early 1990s, when the American Manufacturing System [10], which was hegemonic until that moment, became challenged by the Japanese Production Model, that the strategic character of international operations was fully recognized. Multinationals started a profound reorganization process that was called Productive Restructuring.

Prior to productive restructuring, subsidiaries operated in a relatively autonomous pattern and their organizational structures usually replicated the organizational functions that were found at the headquarters. [11] characterized those subsidiaries as multidomestic. The decisions related to focusing, outsourcing and offshoring as well as the decisions on partnership and servitization started to redefine the role of subsidiaries.

In the International Business discipline, the most important contributions focused on the importance of managing the international network of subsidiaries [12] while in the International Operations discipline the initial approaches to international manufacturing were developed by [13].

Several authors developed taxonomies of subsidiaries leading to different frameworks [11] [14]; Bartlett and Ghoshal's [12] [15] is, perhaps, the best known. Based on a longitudinal study of international operations management in renowned global companies such as GE, Procter & Gamble, among others, they classify firms as multinational, global or international, depending on the roles (competences and capabilities) of subsidiaries.

Ferdows [9], in a seminal article, identified subsidiaries performing the following roles: offshore, source, server, outpost, contributor and lead plant. Those generic roles are a function of two variables: the competence available in the subsidiary and the importance of the local environment where the subsidiary operates to the overall strategy of the multinational.

2.2 The multinational as part of global production networks

During the 1970s and 1980s, changes in the world economic scene, particularly the failure of large American corporations to adequately respond to new competition from Asia, cast doubt on ideas that used the modern corporation as an organizing principle, plunging a range of academic fields into a period of questioning and triggering research into aspects of industrial organization that had previously been obscured. After more than a decade of research and debate, the task of building a new paradigm for industrial organization and economic development is well underway, although consensus is still far from established. Some of what had been obscured has now come into view. The focus has shifted away from the logic and ramifications of the seemingly inexorable expansion of the internal structures of the modern corporation to the external economies created by the ongoing interactions between firms [16]. Sturgeon [17] called this new focus the production network paradigm.

Given that the rate of change of production systems configurations has been so great, it is not surprising that many distinct frameworks are proposed to describe them. A supply chain is one example of an analytical framework and possibly the one that is most important in the POM literature.

Karlsson [18] observes that, currently, companies organize in a way that involves more and more activities that are external to the traditional organizational boundaries. Focusing on recent changes on OEM type of firm [car assemblers], he observed that firms move from the product level to the level of selling functions that create customer value. To be able to handle much more complex offerings, companies abandon lower levels of technology and focus on system integration and product characteristics. The author proposes "an emerging role model for organization of the company with the focus on operations in networks". The perspective created implies a shift from the enterprise to the "extraprise" [18].

Johansen and Riis [19] create an interesting typology (or a template, as they mention), inspired by a research among Danish small and medium sized enterprises. The Interactive Firm would be a concept that codifies the most important characteristics of the firm of the future. It is then expressed in more concrete terms through the identification of three archetypes that may be used as role models: the Focused firm, the Networking firm and the Integrating firm. Each one of them combines, in different proportions, five distinct functions: full-scale production, benchmarking, ramp-up, prototype and laboratory.

The concept of the network organization is also sometimes taken to describe the relationship a company has with other separate companies [20]. The company as a whole, as well as comprising a network of resource clusters internally, also sees itself primarily as a part of a larger network of separate companies. The boundaries of the organization are thus less well defined than in other organizational forms. Relationships and alliances may form between companies to meet the market needs of the time, with the alliances changing as market needs change. Within the organization, individual resource clusters, acting independently, may even make their alliances with outside firms.

The production network paradigm has frequently been advanced in an effort to explain why firms, industries, and national economies organized according to their tenets were outperforming industrial systems organized according to the Anglo-American norm of the vertically integrated modern corporation [17]. External economies allow for the development of trust; industry-, or at least locality-wide sharing of production capacity; greater opportunities for learning and technology transfer within the system; and perhaps most importantly, a superior ability to reconfigure the functional elements of production according to rapidly changing output requirements and the rise of new markets, a feature captured by the term "flexible specialization" [21].

For Sturgeon [22], especially due to the relative power that some firms are able to exert on the actions and capabilities of their affiliates and trading partners, it has been immediately accepted and put to use by both policy-practitioners and researchers, because it helps to make sense of several of the most novel features of the global economy. Nevertheless, the ongoing transformation of the global economy has begun to blur any clear distinction between buyer- and producer-driven industries. First, the research on the organization of global production [23] [24] has revealed a shift away from vertically integrated transnational firms and towards global outsourcing and the use of external supplier networks. Second, companies have begun to change the way they handle technology-intensive inputs and processes. What can and cannot be transferred to suppliers has proved to be a moving target, as better codification schemes have emerged and the capabilities in the supply base have continued to improve over time. New digital tools supporting cross-border

functional integration are being deployed in a wide range of industries, labor- and capital-intensive alike. At the same time, increased outsourcing by manufacturing firms, and increased involvement in product definition by retailers (private label), is blurring any clear distinction between buyers and producers.

Another key issue relates to the coordination of the global production network: who sets the rules for the operations of the entire network? This involves issues of power, or governance as coined by Gereffi et al [25] in their work on Global Value Chains (GVCs). They suggest that some networks are governed by commercial firms (Buyer-Driven Value Chains), while others are governed by (ex) Manufacturing firms (Producer-Driven Value Chains). This issue is extremely important in the study of EMECs because they seldom are commanders of global chains or networks; they usually start at other positions in the global production network and are expected to upgrade gradually to avoid being expelled over time.

Governance within networks seems to be moving downstream, toward those who have direct relationships with the end customer. As a result, early-movers, the traditional MNEs, are seeking a governance position, changing their competences and activities profile toward downstream types of organization. This is likely to open windows of opportunity for emerging economies' firms.

2.3 The multinational as a network of competences

This paper assumes that "the multinational is a differentiated network of dispersed operations, with a configuration of competences and capabilities that cannot be controlled fully through hierarchical decisions about Foreign Direct Investment made by the corporate headquarters" [26].

The notion of a firm as an architecture of competences was triggered by the classic paper "The core competence of the organization" [27]. For them, core competences are built from intangible assets that cannot be easily imitated by competitors, are the source of the company's ability to deliver unique value to its customers and allow the company to be flexible in terms of markets and products. Notwithstanding, every company has to continuously upgrade and renew its set of competences through the management of a systematic process of organizational learning and innovation [28] [29].

The present study will adopt the proposition by Rugman, Verbeke and Yuan [30] that firms have to manage the competences for four value chain activity sets: Innovation, Production, Sales and Administrative support, each associated with distinct location advantages and subsidiary competences. In this sense, keeping the idea that Innovation is related basically to the development of new products, processes and services through R&D and Engineering activities, from now on this competence will be called Engineering instead of Innovation. The present

project will then focus on IOM models that comprise the Manufacturing and Engineering competences.

Additionally, the relationship between headquarters and subsidiaries is a key dimension to be considered. Thus, it is relevant the classification that distinguishes local, non-local and specific competences [26]. Non-local competences are created and developed in an organizational unit and transferable to other branches abroad. When a subsidiary is able to replicate a competence developed in the headquarters (HQ) that is characterized as a non-local competence. The reverse might also happen, that is, a competence developed in a subsidiary may be transferable to other subsidiaries, or the headquarters. For example, subsidiaries located in highly-competitive environments might be able to develop competences in customer relationships superior to the ones existing in other branches and transfer them. Other competences carry local value, mainly. The competence in Human Resources Management is the most typical example because the features of the local environments are the main determinants for its development.

Finally, it may happen that a subsidiary, or the headquarters, develops a competence that would be extremely useful for all affiliates, but its transfer is unfeasible. Specific competences are built from locally available tangible and intangible resources thus inhibiting them from being transferred. Specific competences are typically associated to tacit knowledge, dependent on specific operational contexts and corporate experience.

2.4 A schematic representation

For a comprehensive understanding, a representation of the multinational (Figure 1) shows networks in three levels:

1) It has subsidiaries that organize their own networks, bundling internal competences and external resources: this level can be approached by the several frameworks that analyze the relationship between the subsidiary's various internal sites (production plants, R&D centers, distribution centers, etc.) and its external trading partners (third-party contractors, suppliers, logistics providers, distributors, clients, etc.), either within the subsidiary's host country, which is usual, or in other countries. A common analytical framework for it is the Supply Chain Management [31].

2) It creates an internal network of parent company (headquarters) and affiliate companies (subsidiaries): this level can be approached by the several frameworks that analyze the relationship between the MNE's parent company and its affiliates [15] [26] [32], as well as the roles of the affiliates [30] and the ones that focus on specific functions [1] [33];

3) It is a member of GPNs: this level can be approached by the Competence-based Positioning Framework, initially devised for the analysis of the telecommunications industry [34].

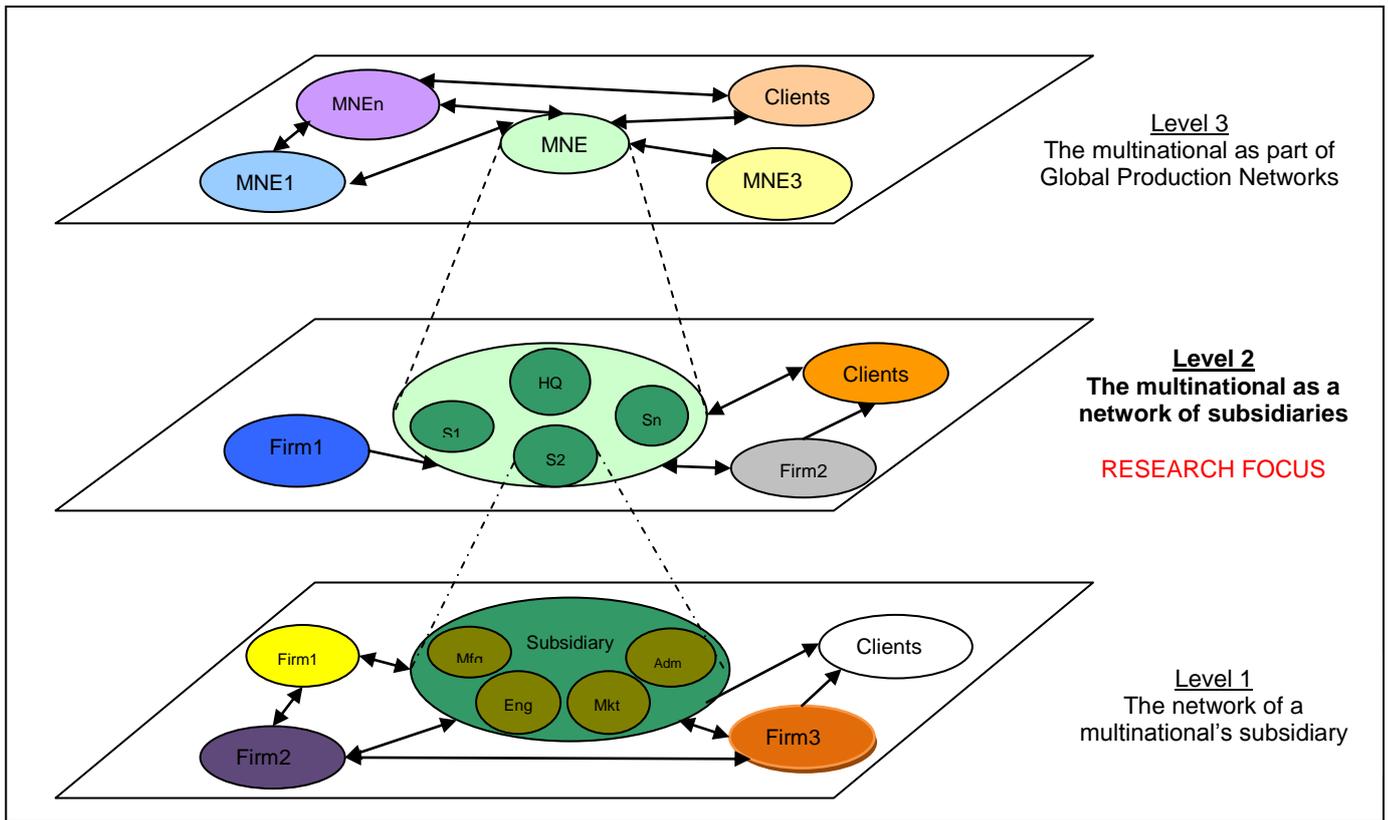


Figure 1 - Industrial and company organization: three levels of networks. The authors.

3 BUILDING THE ANALYTICAL FRAMEWORK

Aiming at building the analytical framework, three approaches found in the literature were identified as potential contributors for that task. They focus respectively on Global Manufacturing Networks [35], Global Engineering Networks [36] and positioning in global production networks [34]. The consolidated network targets

an encompassing approach to the characteristics of multinationals, especially those from emerging countries.

Firstly, a comparison and harmonization of terms, namely the term “network” from an organizational perspective, is of paramount importance. The Table 1, adapted from Zhang and Gregory [33], is an initial attempt to accomplish such task.

Table 1 – Definitions for the term “network”. Adapted from Zhang and Gregory [33].

Elements	Global Manufacturing Networks [1]	Global Engineering Networks [33]	Competence Positioning [34]
Network structure	Should consider individual plant's characteristics and the degree of geographic dispersion	Critical aspects include: geographic dispersion, resources and roles of engineering centers, and rationales for network structure design	Assumes that the position of each firm within the global production network is related to its competence profile
Operations processes	Include operational mechanisms, dynamic response mechanisms, PLM and knowledge transfer processes	Describes flows of information and materials among network members, e.g. NPD, safety management, procurement, etc.	The flows within the network are organized according to the governance pattern
Governance system	Should include horizontal/vertical coordination, dynamic capability building and network evolution	Includes the authority structure and the performance measures	Governance is exerted by the firm which possesses the most strategic competences and capabilities for the performance of the global production network

3.1 The contribution of the Global Manufacturing Network Design

Starting with the Global Manufacturing Network (GMN) Design [35], the first part of the framework reorganizes its elements in the light of Porter's traditional value chain approach [37]. In addition it incorporates the elements which support the value chain design and implementation, namely its overall configuration, the identification of the subsidiaries' location and roles and the coordination mechanisms.

3.2 The contribution of the Global Engineering Network approach

Into that first block the Global Engineering Networks (GEN) approach [33] was incorporated. First, the common elements shared by both GMN and GEN were identified; these are the five activities along the product lifecycle, namely Idea Generation and Selection, Product Development, Production and Delivery, Services and Support, Disposal and Recycle.

3.3 The contribution of the Competence Positioning Framework

The idea that the firm's position in its GPN matters for the analysis of IOM models must now be added to the framework under construction. For Fleury and Fleury [34],

assuming that the referred position depends on the firm's core competences, the Competence-based Positioning Framework (CbPF) provides a thorough background for strategic level analyses (Figure 2).

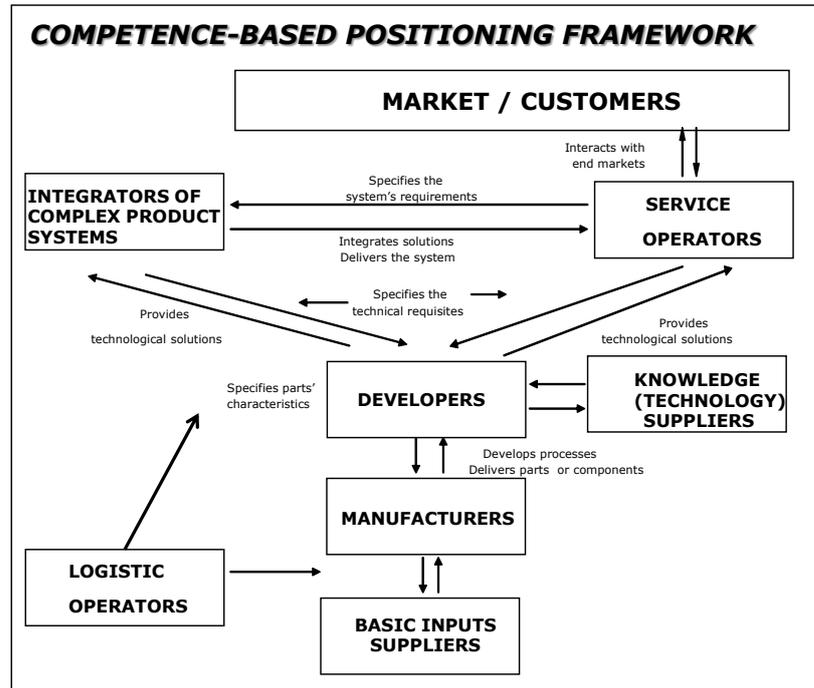


Figure 2 - Competence Positioning Framework. Source: Fleury and Fleury [34].

Firms in each position of the network sustain their competitive strength from a different profile of competences as shown in Table 2.

It is noteworthy that, in the majority of the cases, firms run different businesses and accomplish different production and operational activities. The categorization of these firms took into consideration their main role in the entire

production network or system, that is, its core competence, in the sense established by Prahalad and Hamel [27]. It is rather usual that manufacturing firms have changed their characteristics over time. Currently, besides "traditional" Manufacturers, they can be identified also as Market Operators, Integrators, and Developers.

Table 2 - Core Competences for each corporate role. Source: Fleury and Fleury [34].

	Service Operators	Integrators	Developers	Manufacturers
Main feature	Service providers to the final customer, direct interaction with end markets, B2C	Complex Product Systems (HWS plus SWs plus Operational System)	Innovative solution providers (solution = HW plus SW)	Parts, components and ancillary services providers
Core competence	Customer relationships, Marketing	Customer driven systems design, engineering and assembling	R & D Complex products design and assembling	Manufacturing Standard production processes
Markets and products	Mass, Differentiated and Professional services	Projects made to order or complex products design and assembling	Differentiated systems and products	Low cost, high scale, routine production
Organisational processes	Service conception Service development Service implementation Service operation	Tech monitoring Systems devpt Systems assembling and implementation	Tech monitoring Product innovation (HW plus SW)	Processes conception and development Process operation
Examples	Vodafone, Orange,	Ericsson, NEC, IBM, Embraer,	Apple, Motorola, Samsung	Foxconn, Flextronics, Celestica

3.4 The consolidation of the three approaches

Figure 3 displays the consolidation of the three approaches in one single frame. It encompasses the GMN [1], the GEN [33], as well as the CbPF approach [34].

Then, the other elements mentioned in the three approaches, the ones which deal with the networking dimension mainly, were added to the scheme: Network

Structure, Network Processes and Infrastructure, Network Capabilities, External Relationships, and Network Governance and Coordination. Context (mission, drivers, and barriers) was considered influential in strategic decisions and thus transversal to all other features mentioned.

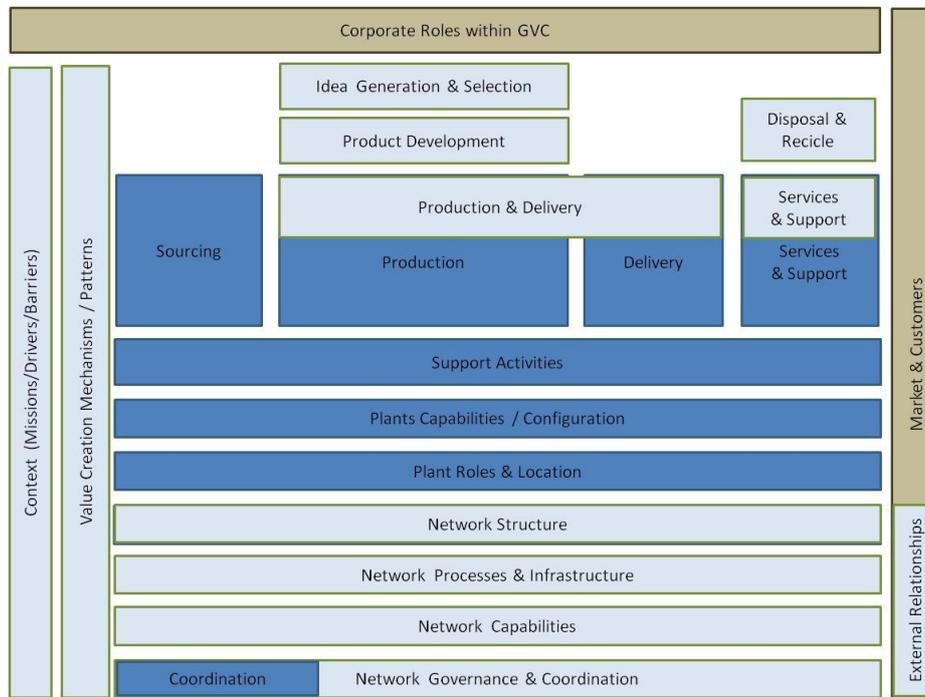


Figure 3 – Integrated activity framework of GEN (dark blue), GMN (light blue) and CbPF (brown). The authors.

4 MAKING THE FRAMEWORK OPERATIONAL: CONSTRUCTS AND INTERRELATIONSHIPS

Finally, Figure 4 presents the consolidated, integrative framework, depicting the three analytical levels of networks, and having the multinational firm at the very core of the analysis. It is important to remark that the unit of analysis in the research is the network, and not a specific firm or one of its sites. As the final target is to make analyses by comparing how multinationals from different emerging countries manage their international operations, the institutional environment must be taken into account as a source of drivers and barriers for the decisions concerning the mission and the shape of the firm's global network.

The application of this framework is planned for EMECs through multiple case studies. Cases will be conducted by analyzing level 1 first, then level 3, while level 2 (intra-firm network), in which IOM concepts and variables are really ingrained, will be the last to be tackled.

4.1 Level 1: the subsidiary's operational network

Roles and Location

Depending on the profile of competences developed by the subsidiary and considering the taxonomy proposed [9], subsidiaries might be classified according to a more general role:

Access to Low-Cost Production - Acting as Offshore or Source, according to local competences

Access to Skills and Knowledge - Acting as Outpost or Lead, according to local competences

Proximity to Market - Acting as Server or Contributor, according to local competences.

Competences and Capabilities

Merging the Strategic Competences [34] to the concepts of Configuration and Support Activities [35], the mapping of subsidiaries' Plant Capabilities and Configuration can be made, thus allowing the definition of the subsidiaries and network roles.

The following list presents a complete set of competences that might be identified in a subsidiary:

- Planning - Competence to identify, formulate, implement and manage competitive strategies.
- Organization - Competence to design, implement and improve management systems.
- Technology - Competence to add value to products and processes
- Production - Competence to produce products and services
- Plant Configuration - Layout and equipment availability
- Commercial - Competence to trade and deliver products and services
- HR Management - Competence to attract, contract, develop and reward people
- Finance - Competence to prospect, negotiate, invest and manage financial resources
- Customer Relationship - Competence to develop and manage market and customer relationships

- Supply Chain Management - Competence to define supply policies, develop and manage suppliers.

Market, Customer and Other Relationships

Customers are active players in the overall dynamics of the industry [37]. Zhang and Gregory [33] extend this

importance of external relationships, referring to the interaction with other external partners, including suppliers, customers, users and collaborators.

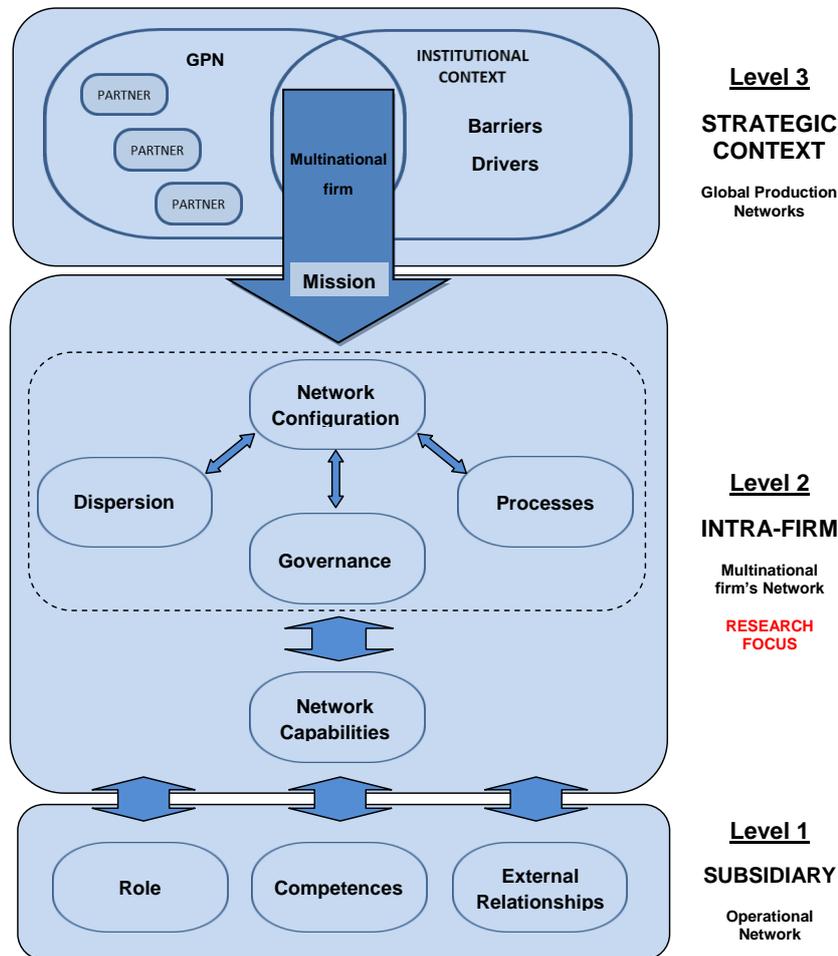


Figure 4 – Consolidated framework with three levels. The authors.

4.2 Level 2: intra-firm network

Network configuration

International manufacturing networks are classified according to the degree of plant dispersion and coordination conditions [1]. Seven configurations were identified, separated in four groups:

a. Regional Focus Networks – Low geographical dispersion and regional focus:

- Regional Uncoordinated Manufacturing Configuration

b. Global Export Networks – Low geographical dispersion and global orientation:

- Home Exporting Manufacturing Configuration
- Regional Exporting Manufacturing Configuration

c. Multidomestic Autonomy Networks – High geographical dispersion, strong autonomy in operations and weak coordination:

- Multidomestic Manufacturing Configuration
- Glocalised Manufacturing Configuration

d. Global Coordination Networks – High geographical dispersion with high global orientation and coordination:

- Global-Integrated Manufacturing Configuration
- Global-Coordinated Manufacturing Configuration

Network processes and infrastructure

Based on Zhang and Gregory [33], the flows (processes) that occur within the network might be:

- Product Flows (materials, components and products)
- Information Flows
- Knowledge Flows

The processes of Information and Knowledge are supported by

- Collaboration & Interaction Tools and Mechanisms

Network governance and coordination

The concept of governance refers to the mechanisms to steer and control the network, including authority structures, performance measurement and coordination mechanisms [33].

Network dispersion

The term expresses the degree of geographical concentration of a multinational's subsidiaries [33]. For example, an intra-firm network concentrated in one

economic bloc is rather different from other whose subsidiaries are scattered around the world.

Network capabilities

Network configuration can be evaluated in terms of the capabilities it brings to firm [35]. The capabilities used to evaluate configuration are:

- a. Cost Efficiency
- b. Customer Responsiveness
- c. Resource Accessibility
- d. Agility
- e. Learning
- f. Risk Management
- g. Manufacturing Mobility

4.3 Level 3: global production networks

The analysis of manufacturing and engineering network configurations must consider the firm's mission and vision, as well as the main drivers and barriers. The GEN approach [33] has the following concepts:

a. Mission – Three key missions may be assigned to the internal network:

- Efficiency-oriented Network – Adoption of mechanisms such as economies of scale/scope, international operations synergies, leveraging expertise or precious resources on a global scale, sharing and reuse of existing solutions

- Innovation-oriented Network – Adoption of mechanisms such as customer intimacy, technology leadership, and market/technology-driven innovation, learning across disciplines or organizations, leaving room for creativity or diversity.

- Flexibility-oriented Network – Adoption of mechanisms such as flexible working approaches, mobile engineering resources, reconfigurable network structures, and local responsiveness.

b. Drivers – The driving forces for the networks, like dispersed and interrelated engineering operations, increasing changes and uncertainties, and increasingly capable ICT.

c. Barriers – Obstacles for global operations, like communication difficulties, economic and organizational barriers, and social and psychological barriers.

5 CONCLUDING REMARKS

This paper aimed to elaborate an analytical framework for the analysis of international operations management in multinational firms, particularly those originated in emerging countries.

In approaching that task, a broad understanding of international operations management was adopted, where three levels of analysis ought to be jointly researched: the level of the subsidiaries, the level of the headquarters and the level of global production networks. In building the analytical framework for that task, concepts of different sources were composed in a single structure.

The development of the framework requires further details and tests. But, in its current standing, it already reveals the complexity implicit in the discipline of international operations management.

The study of EMECs might bring important insights for the field, due to the fact that, by being late-movers in international markets, they behave differently from the mature multinationals and constitute the ultimate field for empirical research.

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