Deepening the timing dimension of emerging market multinational companies' internationalization – an exploratory perspective

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ABSTRACT

Building from the nascent debate pertaining to the internationalization trajectories followed by EMNCs, this article proposes to better understand behaviors of multinational companies from emerging markets (EMNCs). A database containing the complete internationalization trajectory of 110 firms was created to analyze sequence patterns. Optimal matching technique helped us to build a taxonomy of seven distinct sequence patterns (serial acquirers, late acquirers, sequential acquirers, contractual internationalizers, collaborative internationalizers, opportunistic internationalizers, wholly owned internationalizers). Our findings partially confirm previous works pertaining to the internationalization process of EMNCs and shed a light on atypical behaviors which have not been studied yet. These findings allow us to obtain new insights, deepening our understanding of theories depicting how EMNCs behave such as

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springboard theory and the Linkage Leverage Learning framework. We also provide recommendations to MNC managers and for public policy.

KEYWORDS

EMNCs; Internationalization; Sequence Patterns; Springboard Theory; LLL; regional internationalization

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1. Introduction

Various research has been conducted to analyze the behaviors of emerging market multinational companies (EMNCs). In line with Johanson and Vahlne (1977), some researchers found EMNCs follow a sequential and regional approach (Ciravegna et al., 2016; Cuervo-Cazurra, 2008; Lopez et al., 2009). To take advantage of their latecomer positions (Gubbi and Elango, 2016; Kotabe and Kothari, 2016), these types of EMNCs developed a very focused internationalization strategy. An opposite viewpoint was expounded by Luo and Tung (2007) and Mathews (2006). These authors developed the springboard theory and the Linkage Leverage Learning (LLL) framework from the observation that EMNCs exhibit rapid and recurrent behaviors. From their perspective, EMNCs' international environment helps them to extend the scope and speed of their internationalization.

Building from this nascent debate pertaining to the internationalization trajectories followed by EMNCs, we investigate the following question: **What is (are) the pattern(s) of EMNCs' internationalization behaviors**?

In spite of the plethora of articles referring to EMNCs, understanding of their particular strategic behaviors remains inadequate (Luo and Tung, 2018) and needs further research (Surdu et al., 2018). As Luo and Tung (2018:148) acknowledge, it is now necessary "to consider a … taxonomic approach that can provide more insights into the plurality and diversity of [EMNCs]." Indeed, a taxonomy is a proven way to produce (Doty and Glick, 1994; Shepherd and Suddaby, 2017) or strengthen theory as it provides an empirical validation (Dubin, 1969). This approach will help to strengthen the applicability, the reach, and the establishment of existing theories about EMNCs (Surdu et al., 2018).

Consequently, the aim of this article is to derive a taxonomy of internationalization behaviors of EMNCs by analyzing sequence patterns. We conceptualize a sequence in the

EMNCs' internationalization context as the set of decisions leading to an operation (i.e., an entry in a foreign market) over the whole period of the firm's history. Previous works addressing EMNCs' internationalization trajectories (see for example Singh and Gaur, 2013) implicitly acknowledge that the sequence perspective matters, although this concept had never been properly applied using the latest techniques. By doing so, we diversify the scope of existing studies and contribute to understand the various types of EMNCs' internationalization trajectories.

Building on methods derived from the pioneer works of sociologists Abbott and Forrest (1986) and later implemented by University of Geneva specialists (Gabadinho et al., 2011; Studer et al., 2011; Studer and Ritschard, 2016), our article adopt an inductive design to conceptualize a taxonomy of sequence patterns. In line with previous research in the strategy field (Shi and Prescott, 2011), our article focuses on the identification and the analysis of sequence patterns of international commitment following an interdependent longitudinal set of decisions. Sequence analysis as a new empirical approach enables us to better understand and assess the applicability of theories developed from the observation of EMNCs. We enrich the sequence analysis with the learning perspective, central to MNCs' behaviors and at the intersection of the different MNC frameworks (Li, 2010).

We constructed a database of 110 EMNCs from 6 emerging markets (EM hereafter) and which pursued the whole internationalization trajectory by engaging in at least one major acquisition. This large and unique sampling allowed us to collect sequence patterns followed by EMNCs, which had not previously been done. Various perspectives and methods were designed to develop sequence patterns (Abbott, 1990). This article uses an historical perspective to create sequence patterns from firms' complete length of existence. In total, we built a database of 4224 year-observations over the period 1935-2016.

Our study using an original empirical design provides four major contributions. First, we contribute to the EMNC literature by building a taxonomy of internationalization behaviors from an inductive perspective. We identify seven distinct sequence patterns highlighting the diversity in how EMNC managers lead their international commitment. By doing so, we address the nascent debate pertaining to the internationalization trajectories followed by EMNCs. Second, sequence analysis shows that firms exhibit differences within types of behaviors. Our taxonomy echoes the findings previous works on EMNCs internationalization behaviors (Ciravegna et al., 2016; Cuervo-Cazurra, 2008; Lopez et al., 2009; Luo and Tung, 2018). More specifically, we confirm both the aggressive, rapid, and recurrent behaviors of some EMNCs and the tendency of some other EMNCs to adopt regional and sequential internationalization. Beyond that dyadic approach, our results show that erratic and opportunistic behaviors exist. In this way, we deepened the theorization of the specificities of EMNCs' internationalization. Third, we contribute to recent calls to reinforce the temporal perspective and to understand interconnectivity of the multiple international operations of EMNCs (Luo and Tung, 2018). Our study therefore enriches foundations for future theoretical and empirical works that will lead to further understanding the specificities of EMNCs. Fourth, from a managerial standpoint, our taxonomy helps us to better comprehend the various types of internationalization. This guides EMNC and MNC managers to anticipate his/her firm's next moves by better fitting its behaviors with the internationalization trajectory of its competitors. As Miles et al. (1974) and Fiegenbaum et al. (1996) proposed, this coherence will lead to higher performance.

The structure of the article reflects the inductive approach of this paper. The literature review emphasizes the fact that sequence pattern analysis has been overlooked by extant taxonomies of EMNCs. We then expose the contribution of this new approach. The method section details the context of the study, its sample, and how the specificities of this method are seldom used in management. The later sections present the taxonomy and discuss our findings.

2. Patterns of EMNCs' internationalization behaviors

2.1 Discussing theoretical frameworks describing EMNCs internationalization

Many researchers claim that existing frameworks should be adapted to take into account specificities of EMNCs (Child, 2009). Theories and models about internationalization developed for advanced markets, such as eclectic paradigm (OLI model), Born Global or the Uppsala model, are partially adapted to explain behaviors of firms from emerging countries (Cuervo-Cazurra, 2008; Hennart, 2012; Lopez et al., 2009; Santangelo and Meyer, 2011) as the advantages of EMNCs differ from those of developed market (Cuervo-Cazurra, 2008).

Several observations confirm the questioning of existing frameworks. First, EMNCs are characterized by complex and unstable institutional contexts, pushing firms to adopt specific behaviors to cope with this environment (Meyer and Thaijongrak, 2013). More specifically, EMNCs develop absorptive capacities (Kothari et al., 2013) and flexible routines (as opposed to rigid routines proposed by Gilbert (2005)) to adapt to their contexts. These characteristics help EMNCs to cope with organizational changes required by accelerated internationalization (Mathews, 2006).

Second, EMNCs, as late movers, evolve in an already highly internationalized environment (Gaffney et al., 2016; Luo and Tung, 2018). Incumbent international firms expand through foreign direct investment (FDI), export, or directly solicit local firms to form a partnership. This international exposure develops firms' awareness of international opportunities and networks. EMNCs are likely to exhibit rapid and/or discontinuous international commitment (Luo and Tung, 2007). In addition, EMNCs late-mover position has led some authors (Kotabe and Kothari, 2016; Kothari et al., 2013) to argue that their growth strategies are based on acquisition initiatives.

Based on these observations, new theoretical frameworks such as the springboard theory or the LLL framework are being developed. These approaches are more in line with the specificities of EMNCs since they consider their late arrival in international competition and the characteristics of their domestic and international environment.

In spite of the plethora of articles referring to EMNCs, the understanding of their particular strategic behaviors remains inadequate (Luo and Tung, 2018) and needs further research (Surdu et al., 2018). We consider the learning perspective, central to MNCs' behaviors and at the intersection of the different MNC frameworks (Li, 2010), to be a relevant starting point for discussing the strategic behaviors of EMNCs.

2.2 Empirical perspectives about research describing EMNCs' behaviors

Building from discrepancies between EMNCs' specificities and all the existing theories, three groups of research have emerged to discuss EMNCs' behaviors.

First, decision-oriented studies implicitly refer to the interconnected sequence of decision-making. Few authors have contributed to this perspective (Alvarez and Marin, 2013). Among them, Pananond (2013) studies Taiwanese MNCs that are expanding internationally. Her research identifies how a subsidiary initiated a strategic international expansion for the parent MNC. Pananond clearly describes the sequence pattern of Taiwanese MNCs raising their international commitment through the globalization of their value chain.

Second, the cluster-analysis approach views internationalization strategies as an option for categorizing EMNCs. This perspective is one of the most represented in extant international business literature on MNCs and EMNCs. Articles that fall into this category are of two kinds. The first kind uses a taxonomy to build theory (Li, 2010; Luo and Tung, 2007; Mathews, 2006) or to describe firm behaviors (Oviatt and McDougall, 1994). For instance, Mathews (2006) went "beyond the framework established by OLI" (p. 18) to develop the LLL framework from

an analysis of the commonalties among the different types of EMNCs. The second kind derives a taxonomy from empirical data (Cuervo-Cazurra and Genc, 2008; da Silva et al., 2009; Fleury et al., 2013; Guillen and Garcia-Canal, 2009; Moghaddam et al., 2014; Ramamurti, 2009). These taxonomies are deterministic in the sense that previous studies assess when and under what conditions firms' internationalization strategies occur and succeed. For instance, Fleury et al. (2013) propose a cluster analysis and identify four types of innovation strategies (producing and commercializing products or services, producing for market niches, producing for the buyer firms in global value chains, producing commodity at cheaper prices in a sustainable way) which provide Brazilian multinationals with the capacities necessary to engage in internationalization strategies. While this approach adopts an integrated focus of internationalization strategies, it centers on a few epiphenomena from the firm's life course. In addition, it concentrates on characteristics not directly linked to timing, which does not help to build the sequence patterns of internationalization.

The third approach draws on longitudinal studies, stresses the role of time and learning, and identifies themes embedded in the evolving phenomenon of EMNCs' foreign expansion. Many authors adopt this approach. Singh and Gaur (2013) examine the impact of firm-level governance structure on the internationalization strategies of emerging-market firms with a cross-sectional dataset. Kothari et al. (2013) use an inductive approach to conduct an historical analysis of eight Chinese and Indian companies and to propose a dynamic three-stage model of EMNCs' international expansion ("licking the dirt" to carve out the way; taking off with speed and strength; around the world with excellence).

Although these three perspectives reflect most studies about EMNCs' behaviors, some articles may not fall into a single group. For instance, Luo and Tung (2007) theoretically developed a taxonomy to analyze the EMNCs' decisions from a longitudinal perspective. In addition, the sequence concept is central and underlying to the three major perspectives

addressing patterns of EMNCs' internationalization behaviors. The first approach neglects the historical perspective by focusing on a few decisions that occurred in a limited time frame. This prevents an in-depth understanding of the whole sequence of operations explaining further international commitment. The second approach cannot fully examine the timing of internationalization as no authors base their cluster analysis on sequence patterns except for Shi and Prescott's (2011) article on the mergers and acquisitions (M&A) behaviors of MNCs. The third approach adopts an historical perspective by focusing on the whole sequence. However, the major focus of these studies is not to develop a taxonomy of behaviors. Our article proposes the creation of a taxonomy of internationalization patterns based on a longitudinal perspective of EMNCs' operations. Therefore, it is positioned at the intersection of the three perspectives, which will help advance the understanding of EMNCs' behaviors.

To sum up, researchers studying EMNCs' internationalization have provided considerable insights into the analysis of particular and distinctive dimensions of sequence patterns. EMNCs are characterized by *rapid*, *radical*, *systematic*, and *recurrent* internationalization behaviors (Luo & Tung, 2007, 2018; Mathews, 2006) that can be observed through distinct dimensions such as speed (Kothari et al., 2013), distance between home and target countries (Cuervo-Cazurra, 2008), and diversity of mode of entry (Li, 2010). The existing research mentioned above implicitly assumes that EMNCs' internationalization patterns consider these dimensions as discontinuous. This emphasizes the importance of analyzing the discontinuity of sequence patterns. However, as explained earlier in this article, sequence patterns of EMNCs have only been partially studied. Doing so neglect the relationships between sequence patterns of organizational processes, contingencies, and outcomes necessary for taxonomical research (Shi and Prescott, 2011). In this context, an inductive approach is required to identify sequence patterns.

3. Contribution of sequence patterns to EMNCs' internationalization behaviors literature

Adopting a "whole sequence" analysis presents several advantages. The following paragraphs detail their main components.

Exploring the sequence patterns of internationalization helps researchers to better understand whether different firms adopt idiosyncratic behaviors reflecting similar sequences of operations in their internationalization process (Knight and Liesch, 2016). It enriches recent EMNCs' internationalization research (Li, 2010; Luo and Tung, 2007, 2018; Mathews, 2006) which calls for a better understanding of EMNCs' internationalization processes. Indeed, a small number of frameworks have been derived from the analysis of a selected number of companies (Luo and Tung, 2007) and of operations (Mathews, 2006). Sequence pattern analysis, by analyzing all operations over the life history of a large number of firms, represents a unique way of generalizing existing internationalization frameworks.

Studying the sequence operation level allows us to provide a more comprehensive explanation of the learning mechanisms of internationalization. On the one hand, learning affects internationalization behaviors of firms (De Noni and Apa, 2015). On the other hand, firms that operate in diverse international contexts through diverse modes of entries are likely to learn and to develop rich knowledge (Barkema and Vermeulen, 1998). The analysis of sequence patterns of EMNCs is valuable because it stresses variations of learning mechanisms and their attached behaviors. Existing theories overlook these elements and cannot appreciate the manner in which each EMNC conducts its internationalization throughout its history. More specifically, the analysis of sequence patterns helps to connect motivations and means of internationalization (Li, 2010). On the one hand, firms choose their mode of entry depending on their motives to seek novel and tacit knowledge (exploratory learning) or to utilize extant and explicit knowledge (exploitative learning). On the other hand, this choice depends upon the way in which the firm intends to acquire knowledge from the operation. It can be passive

(unilateral learning) or active (bilateral learning). As Li (2010:50) acknowledges, this Weberian view is reducing and "one can find possible exceptions to the general rules. However, this imperfection does not negate the value of general rules for the likely connections between learning trajectories and entry strategies."

Shi and Prescott (2011) identify two other interesting arguments. The first deals with a managerial perspective: identifying firm-specific sequence patterns enables us to predict in a better way the firm's next move and to determine some contingency variables. The second is empirical: sequence pattern analysis is the first step prior to testing moderator variables and building theory associated with the taxonomy. For instance, this step enabled Shi and Prescott (2011) to explore the question of the influence of the sequence patterns' strength or types on firms' performance.

4. Method

A whole sequence approach within an historical context is used to understand modes of entry over the life history of a firm. As the EMNC research stream is fairly new (Jormanainen and Koveshnikov, 2012; Kin et al., 2015), and as sequence patterns have not yet been mobilized to study behaviors of EMNCs, we conducted a descriptive research since it can "spur the search for underlying theoretical explanations*"* (George and Bennett, 2004: 239).

The following subsections present the study sample, the variables, and the technique used to analyze data.

4.1 Settings

Our research aims to study firms from emerging markets (EMNCs). These countries exhibit similarities in terms of sustained, above average rates of economic growth, high levels of government involvement in economic affairs, weak market-supporting institutions (Andreff, 2002), weak role of government, and weak institutions (Santangelo and Meyer, 2011). EMNCs

are distinguished from advanced-economy MNCs by the level of development of their countries of origin. These firms have several specificities: they augment their home-country advantages through internationalization (Aulakh, 2007) drawing on a range of firm-specific advantages that result from institutional voids and close business-government relations (Khanna and Palepu, 2009). EMNCs develop specific advantages (Rugman and Verbeke, 2004) and strategies that help them to achieve a high level of international performance (Hennart, 2012). Most theories developed in the field of EMNCs claim that these firms base their growth strategies on acquisition initiatives due to their late-mover position (Kotabe and Kothari, 2016; Kothari et al., 2013; Sethi, 2009).

We produced a list of EMNCs from the SDC Platinum database, which is regarded as one of the most complete and reliable databases currently available (Gaffney et al., 2016). We selected EMNCs from the six most common emerging markets (collectively known as BRICSAM[2]) as they contain the highest number of EMNCs (Sethi, 2009) and as they are the most represented in international rankings (e.g., Fortune Global 500). To ensure that firms from our data set pursued the complete potential internationalization trajectory we selected firms that operated at least one acquisition between 2000 and 2016. This step was necessary To obtain a homogeneous sample, we excluded all acquisitions that (1) may have been associated with round-tripping acquisitions (Rabbiosi et al., 2012), (2) were listed in the financial sector (Elango and Pattnaik, 2011), or (3) had been carried out by subsidiaries of Western European and/or North American companies located in one of these six countries (Rabbiosi et al., 2012). These criteria led us to generate a list of 504 firms.

The internationalization trajectories of these firms all exhibit the higher form of commitment (at least one major acquisition) at various stages of their existence. To represent

[2]BRICSAM stands for Brazil, Russia, India, China, South Africa, Mexico

the whole internationalization trajectory, we subsequently studied the various modes of entry that the EMNCs followed before and/or after this operation for all 504 firms. Our epistemological position prevented us from studying pre-internationalization behaviors and mechanisms underlying the commitment which did not lead to an entry. In other words, while certain aspects of this article are process based, the methods used in the examination of our research questions are, in essence, variance based and discontinuous.

We enriched the database with descriptive variables (country of origin, age, size, industry, speed, and scope) and pattern data (mode of entry, target countries, and years). We obtained these data from a complementary database (Mergent Online) and company websites and reports. We then carried out a data-cleaning exercise to delete incomplete or inconsistent data. This led us to a final sample composed of 110 listed firms that exhibited any form of outward international commitment between 1935 and 2016 and that realized at least one major acquisition over the period 2000-2016 (see Table 1 for sample characteristics). The final sample is composed of 4224 year-observations including modes of entry, countries, and years.

Table 1. Sample characteristics

	Brazil	Russia	India	China	South Africa	Mexico	**TOTAL**
Country of origin	22 (20%)	25 (22.7%)	25 (22.7%)	17 (15.5%)	11 (10%)	10 (9.1%)	**110 (100%)**
Industry							
1- Agriculture	1	0	0	0	1	0	**2** (1.8%)
2- Mining	0	3	0	1	2	0	**6** (5.5%)
3- Construction	2	0	0	1	0	0	**3** (2.7%)
4- Manufacturing	14	16	18	11	3	8	**70** (63.6%)
5- Transportation, Communication	1	3	2	2	2	0	**10** (9.1%)
6- Wholesale Trade	0	0	1	0	0	0	**1** (0.9%)
7- Retail Trade	1	1	0	0	0	0	**2** (1.8%)
8- Services	3	2	4	2	3	2	**16** (14.5%)
Firm Size							
Less than 250 employees	2	0	3	1	0	2	**8** (7.3%)
250 - 4 999 employees	5	7	13	11	6	3	**45** (40.9%)
More than 5 000 employees	15	18	9	5	5	5	**57** (51.8%)
Age at internationalization							
Less than 6 years old	5	14	6	7	5	0	**37** (33.6%)
More than 6 years old	17	11	19	10	6	10	**73** (66.4%)

4.2 Variables

This subsection details the variables used to identify and characterize the types of internationalization behaviors observed in our sample.

4.2.1 Modes of entry

In line with Luo & Tung (2007; 2018), EMNCs' aggressive behaviors are exhibited by outward direct foreign investment conducted to acquire strategic assets. This dimension is thus endogenous to the firms selected in our sample.

The analysis of modes of entry allows us to identify idiosyncratic behaviors over a substantial period of time (systematic behaviors). Modes of entry were coded from one to five to reflect the intensity of commitment. According to Pan and Tse (2000), the first level of the choice of mode of entry is non-equity (export strategies and contractual strategies) versus equity modes (cooperation strategies and wholly owned strategies). To code modes of entry, we have attempted to go beyond the dichotomy between equity and non-equity modes. A binary vision of modes of entry would prevent upward spiral behaviors catapulting EMNCs from one mode of entry to another. Thus, our article is aligned with research that considers that modes of entry reflect a spectrum of involvement (Brouthers, 2002). Our coding reflects the four categories proposed and tested by Pan and Tse (2000). In addition, we distinguish majority acquisition as it is a higher form of commitment and represents a higher risk than other modes of entry (Meyer and Thaijongrak, 2013). The final coding is composed of five levels as shown in Table 2.

Table 2. Classification of modes of entry according to their commitment intensity

Export strategies	(1)	Export (direct, indirect, others)
Contractual strategies	(2)	Alliances, licensing, franchise, R&D contracts, others
Cooperation strategies	(3)	Minority JV, 50% share JV or majority JV, minority acquisition
Wholly owned strategies	(4)	Subsidiary
	(5)	Majority acquisition

4.2.2 Descriptive variables

According to Luo & Tung (2007; 2018), EMNCs are characterized by *radical*, *systematic*, and *recurrent* internationalization behaviors. These EMNCs' behaviors are *radical* in the sense that these kinds of firms develop aggressively and rapidly in countries with a high level of psychic distance. They are *recurrent* in the sense that operations are reproduced over time in terms of scope of mode of entry and target countries. They are systematic as international operations are designed as a *long-range strategy* to facilitate firm growth. In other words, over a long period of time, EMNCs exhibit idiosyncratic behaviors.

Descriptive variables characterize timing, distance of the target market, scope of mode of entry, and scope of target countries.

The rapidity of internationalization has several definitions and measures in extant literature. We chose to use a tridimensional perspective to represent in detail the time dimension of internationalization (Casillas and Acedo, 2013; Chetty et al., 2014). Speed of operation is measured by computing the average number of operations (in terms of mode of entry) per year (Vermeulen and Barkema, 2002). Speed of expansion is measured by computing the average number of countries reached per year (Casillas and Acedo, 2013; Chetty et al., 2014; Jain et al., 2019). The number of countries refers to the number of countries in which the firms have operations (whatever the mode of entry: export, contractual, cooperation, wholly owned). Age at internationalization reflects the latency, that is, the time the firm waited to achieve its first international operation (Khavul et al., 2010). This variable is dummy coded to distinguish old firms from young ones. The threshold of six years was chosen based on several studies (Shrader et al., 2000; Zahra et al., 2000).

Distance is measured with a variable named geographical scope. This variable distinguishes a localization strategy focused on a region of the world (Lopez et al., 2009) (coded 0) from a global strategy (coded 1).

Recurrence of behaviors is measured by the total number and the coefficient of variation of operations and target countries (scope of mode of entry and scope of the target country). These variables show how substantial and focused EMNCs' internationalization strategies are in terms of operation and target countries.

We supplement this first set of variables (see Table 3) with other control variables related to the EMNCs' countries of origin (countries coded 1 to 6), to their size (coded 1 to 3), and to their industry (coded 1 to 8) (Sethi, 2009). We also control the year in which each first operation occurs (coded "before 1980", "between 1980 and 2000", and "after 2000") to verify the "novelty" of the phenomenon (Hitt et al., 2016; Jormanainen and Koveshnikov, 2012; Sethi, 2009). This variable is named year of first operation. These measures enrich the description of the sample while meeting our goal of characterizing internationalization behaviors of multinational firms from emerging countries.

Table 3. Descriptive variables

Type of variable	Variables	Measure	Sources
Rapidness	Speed of operation	Average number of operations per year	Calculated from a triangulation of SDC platinum & Mergent Online databases complemented by firms' websites and reports
	Speed of expansion	Average number of countries per year	
	Age at internationalization	Age at internationalization	
Distance	Geographical scope	Regional or global presence	
Idiosyncratic behaviors	Scope of operation	Total number of operations Coefficient of variation	
	Scope of target country	Total number of target countries Coefficient of variation	

4.3 Developing sequence patterns of internationalization behavior

Process studies focus on analyzing the emergence, the growth, or the termination of internationalization trajectories (Langley et al., 2013). Sequence analysis enables us to use occurrences of events as the unit of analysis and is particularly suited to identifying recurrence

of events and pacing during a specified duration (Ancona et al., 2001). It is therefore acknowledged to contribute significantly to deepening insights about process studies.

Previous research in this area is limited as it was mostly done manually or using UCINET, the software designed for network analysis (Shi and Prescott, 2011). TraMineR was developed in 2010 and quickly recommended by several authors from the fields of geography, statistics, and management (van der Laken et al., 2018). This software has already been used by several researchers (e.g., O'Flaherty et al., 2016; Scuderi and Dalle Nogare, 2018) and represents an opportunity to strengthen process studies.

Studying idiosyncratic internationalization behaviors of EMNCs requires us to consider collections of sequences and to sort, group, and compare these sequences. More specifically, distances between sequences are computed pairwise using several techniques to measure the alignment or misalignment of sequences. These distances are used to categorize sequences into patterns based on their degree of similarity (Gabadinho et al., 2011).

The following subsections detail the two-stage procedure followed to analyze the sequence of firms' internationalization histories (Studer et al., 2011): measuring the pairwise dissimilarities between sequences based on inter-firm distance (1); and using an unsupervised clustering algorithm to find homogeneous groups from the dissimilarities measures (2). Each stage was computed with TraMineR (v2.0-12, freely available with CRAN-R software), developed by Gabadinho, Ritschard, Studer, and Müller, sociologists from the University of Geneva.

4.3.1 Computing the dissimilarity measure

Numerous techniques have been developed recently to compute dissimilarity measures. The choice is complex because it usually requires integrating multiple criteria such as the number of states (i.e., the distinct elements constituting the sequence), their distribution, timing, order,

or duration. In our case, optimal matching (Abbott and Forrest, 1986) technique enables us to take into account the sequencing of states (i.e., the order of the distinct successive states) by reducing the cost of changing from state A to state B. Optimal matching computes inter-firm distance based on the differences between their sequences. More specifically, the distance is calculated from measuring the number of operations necessary to transform one sequence into another. Operations are measured in terms of insertions, deletions, and substitutions. The rationale underlying this dynamic dissimilarity distance is relevant when sequences consist of strings of well-defined elements (Shi and Prescott, 2011).

We followed several steps to compute the dissimilarity measure. First, we transformed the raw data into a time-stamped event (TSE) sequence format (see Table 4 for an example) using Visual Basic for Applications (VBA) programming. We then converted this to state sequence (STS) format using the TraMineRextras package.

Second, we calculated the distance between pairs of sequences using optimal matching technique with the TraMineR package. The following example concretely explains the underlying calculation of optimal matching techniques. Firms 1 and 2 in Table 4 have different sequence patterns of internationalization. Behaviors of firms 1 and 2 differ in the years 1935, 1936, 2015, and 2016. We can transform the sequence of firm 1 into the sequence of firm 2 by deleting 5 in 1935 and 1 in 2016, and by adding 5 in 2015. Computing the number of insertions, deletions, and substitutions to transform the sequence of firm 1 into the sequence of firm 2 gives the dissimilarity between the two firms. Three actions are taken to change the sequence of firm 1 into that of firm 2. The higher the similarity of the sequences, the more structurally equivalent they are (Krackhardt, 1990).

Third, as our sample contains operations from 1935 to 2016 and that the lengths of the firms' histories differ over that period, we have to reduce the effect of length variation. To do

so, we standardized dissimilarities between each sequence by dividing the number of transformations by the length of the longer sequence (Gabadinho et al., 2011).

Table 4. Factitious sequence data for internationalization behavior: 1935-2016

ID	Year	Event
1	1935	5
1	1936	3
1	2016	1
2	1936	3
2	2015	5

Notes: In the cells of the table, the figures correspond to the modes of entry as defined in Table 2. As an example of how to read the table, for firm 1, in the 1935 cell, event 5 means that firm 1 conducted a major acquisition that year. In 1936, event 3 indicates that firm 1 conducted a cooperation strategy following the major acquisition.

4.3.2 Cluster analysis

Cluster analysis aims at finding automatically homogeneous clusters of sequence patterns (Kaufman and Rousseeuw, 2005). This exploratory method identifies distinct groups of sequences of minimized intra-group distances. Cluster analysis is based on the dissimilarity matrix containing three attributes: the number of entries conducted each year; their transitions' cost (i.e., the cost of switching between export, contractual, cooperation, and wholly owned strategies); and their succession in time.

Non-supervised hierarchical analysis identifies sets of clusters that share similar patterns of states from the dissimilarity matrix. To select the number of clusters, we rely on the fusion coefficients to determine the number of clusters at each agglomerative stage. Significant jumps in fusion coefficients suggest that reducing the number of clusters may not be relevant. Finally, we calculated the quality of within clusters grouping. Quality of the classification is assessed by computing the Average Silhouette Width[3] (ASW) of the whole taxonomy and of

[3] Rousseeuw (1987) define the silhouette with the following formula : $s(i)=(b(i)-a(i))/\max\{a(i),b(i)\}$ where a(i) is the average dissimilarity between i and all other points of the cluster to which i belongs and b(i) is the dissimilarity between i and its "neighbor" cluster.

each group. The last step is to ensure coherent coding aligned with theory and to study descriptive variables of each group. This will enrich the taxonomy (Fiss, 2011).

The following table 5 provides an overview of the method used in this paper.

Table 5. Methodology overview (1/2)

Step 1 of 2
Measuring the pairwise dissimilarities between sequences (inter-firm distances)

Steps	*Examples (simplified example)*	*Software used*
a. Computing dissimilarity measures		
Collect raw data		Excel

	Operation 1		Operation 2		Operation 3	
	Year	Mode of entry	Year	Mode of entry	Year	Mode of entry
Firm 1	1935	5	1936	3	2016	1
Firm 2	1936	3	2015	5		

↓

Transform data to time-stamped event (TSE) sequence format — Excel – VBA

ID	Year	Event
1	1935	5
1	1936	3
1	2016	1
2	1936	3
2	2015	5

↓

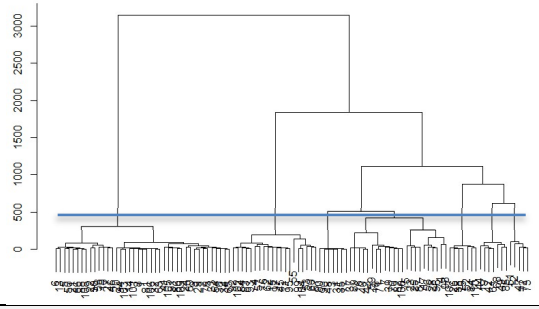
Transform data to state sequence (STS) format — TraMineRextras package

	1935	1936	…	2015	2016
1	5	3	N	N	1
2	N	3	N	5	N

N=None

b. Calculating the distance between pairs of sequences using optimal matching technique				
Transform sequence 1 into sequence 2	Delete “5” in 1935 Delete “1” in 2016 Add “5” in 2015	→	Transition cost = 3 changes required	→ The higher the similarity of sequences, the more structurally equivalent they are.	TraMineR package
Standardize dissimilarities	Standardizing by dividing the number of transformations (here transition cost = 3) by the length of the longer sequence (here 3).				TraMineR package

Table 5. Methodology overview (2/2)

Step 2 of 2 Cluster Analysis		
Steps	*Examples borrowed from the data analysis of the article*	*Software used*
a. Creating dissimilarity matrix		
Create dissimilarity matrix from the three attributes: - number of entries each year - transition costs - succession in time	1 2 17.786 3 156.342 142.501 4 151.588 151.713 160.905 5 37.601 23.760 118.741 159.773 6 49.424 35.584 114.807 151.946 11.823 7 73.190 59.349 93.073 156.142 35.589 31.655 8 1.979 15.807 154.363 151.605 35.622 47.445 71.211 9 19.790 5.949 136.552 151.764 17.811 29.634 53.400 17.811 10 49.297 35.456 134.659 139.984 27.679 19.851 51.507 47.318 29.507	TraMineR package
b. Selecting the number of clusters		
Select groups from jump of fusion coefficients	Selecting groups from the dendrogram  	TraMineR package
c. Checking the quality of within clusters grouping		
Calculate ASW of each sample and of the overall classification	See table 6 for example → ASW greater than 0.52 means that the structure of the cluster(s) is homogeneous.	WeightedCluster package
d. Analyzing the results		
Chronograms Mean Times Enrichment with descriptive variables	See figure 1 and table 7 for examples See tables 8 and 9 for examples	TraMineRextras package Base R

5. Results

As suggested by Shalizi (2009), three conditions are necessary to ensure a relevant clustering (quoted by Studer (2012)). First, the clustering should be independent of the sample to ensure that it is generalizable (our analysis is based on algorithms used in similar studies such as Shi and Prescott (2011)). Second, it should include other attributes (the descriptive variables used in the results help to better appreciate the content of each group). Third, it should be based on existing theory. The first two conditions are developed in the rest of this section, the last one is tackled in the discussion.

The cluster analysis of state sequence is similar to a traditional cluster analysis. Firms are grouped to minimize intra-group dissimilarity and to maximize inter-group dissimilarity. The following cluster analysis is based on the ward algorithm as it gives the highest values of the ASW, the indicator of the homogeneity of the cluster (Studer, 2012).

Clustering analysis distinguishes seven distinct clusters. The dendrogram shows that major jumps in fusion coefficients occur for the six-cluster and seven-cluster solution (figure available upon request). The calculation of the ASW score of the six-cluster solution is below the threshold suggested by the literature (Studer, 2012). We thus conclude that the seven-cluster solution best indicates distinct and homogeneous sequence patterns (see Table 6). R^2 of 0.600 confirms the very satisfactory quality of this clustering.

Table 6. Homogeneity of clusters

Cluster	n	ASW
Cluster 1	41	0.75312368
Cluster 2	7	0.97048052
Cluster 3	20	0.66482724
Cluster 4	23	-0.02649675
Cluster 5	5	0.65826828
Cluster 6	7	0.69663131
Cluster 7	7	0.86916672

Notes:
n = number of individuals per cluster
ASW of the sample equals to 0.57060951
ASW greater than 0.52 means that the structure of the cluster(s) is homogeneous (Studer, 2012).

Table 7 shows the mean times spent in different modes of entry of each cluster. Mean time in seq – X refers to the time spent per mode of entry for the cluster X (average numbers of years). For instance, mean time in seq – 1 shows that firms from cluster 1 spent most of their time in the acquisition mode of entry. Firms from cluster 1 favor acquisition over other modes of entry.

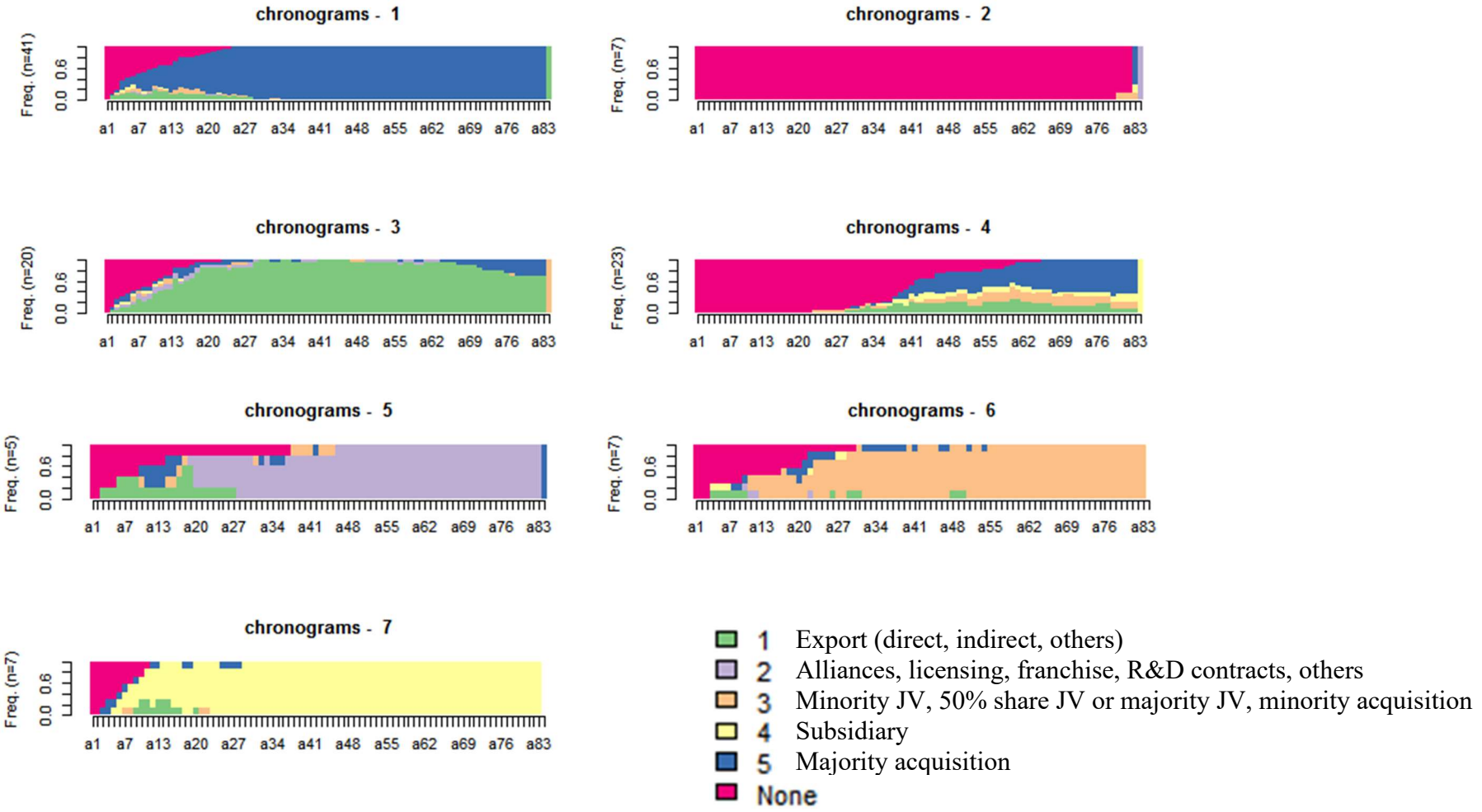
Figure 1 shows the chronograms of sequence patterns. Chronogram – X graphically represents the sequence of operations of cluster X. The colors presented in the legend refer to the modes of entry from 1 to 5 as presented in Table 2. The abscissa axis represents the years at which the operation occurs, whereas the ordinate axis represents firms. For instance, chronogram – 1 shows that the pattern of firms from cluster 1 is to firstly conduct a major acquisition and not diversify with other modes of entry.

Table 7. Mean times of EMNCs' internationalization sequences

Strategies		Modes of entry	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7
Export strategies	(1)	Export	3,76	0,00	52,04	7,67	8,70	1,85	2,14
Contractual strategies	(2)	Alliances, licensing, franchise, R&D contracts	0,24	1,00	1,04	0,00	52,50	0,31	0,00
Cooperation strategies	(3)	Minority JV, 50 % share JV or majority JV, minority acquisition	1,52	0,57	1,61	0,08	2,70	55,85	0,57
Wholly owned strategies	(4)	Subsidiary	1,36	0,14	0,57	1,50	0,00	7,23	61,71
	(5)	Majority acquisition	68,93	0,71	5,48	16,33	7,50	4,00	2,14

Notes: Caption corresponds to different operations identified in the sequence analysis (average number of years spent in the modes of entry).

Figure 1. Chronograms of EMNCs' internationalization sequences



Tables 8 and 9 present the descriptive and control significant variables used to qualify the different clusters. We analyze discrete variables with Khi² tests (Table 8) and compare characteristics of continuous variables of clusters using ANOVAs (Table 9). This technique enables us to compare pairwise characteristics of clusters.

Table 8. Seven sequence patterns and their discrete variables

Characteristics		Total sample	1 Serial acquirers	2 Late acquirers	3 Sequential acquirers	4 Opportunistic internationalizers	5 Contractual internationalizers	6 Collaborative internationalizers	7 Wholly owned internationalizers	Khi²
Age at internationalization (descriptive variable)	Less than 6 years old	37	20	0	9	0	2	2	4	22.479***
	More than 6 years old	73	21	7	11	23	3	5	3	
	Total	*110*	*41*	*7*	*20*	*23*	*5*	*7*	*7*	
Geographical scope (descriptive variable)	Regional	48	16	6	9	12	1	0	4	13.165**
	Global	62	25	1	11	11	4	7	3	
	Total	*110*	*41*	*7*	*20*	*23*	*5*	*7*	*7*	
Country of origin (control variable)	Brazil	22	8	1	1	8	0	1	3	63.934***
	China	17	11	0	1	1	0	2	2	
	India	25	7	1	6	7	1	3	0	
	Mexico	10	3	0	3	3	0	0	1	
	Russia	25	10	1	9	1	4	0	0	
	South Africa	11	2	4	0	3	0	1	1	
	Total	*110*	*41*	*7*	*20*	*23*	*5*	*7*	*7*	
Year of the first operation[1] (control variable)	Before 1980	12	0	0	7	4	1	0	0	32.690***
	1980-2000	27	8	3	7	3	0	4	2	
	After 2000	71	33	4	6	16	4	3	5	
	Total	*110*	*41*	*7*	*20*	*23*	*5*	*7*	*7*	

Notes:
**p<0.05 and ***p<0.001
[1] To simplify readability we chose the 1980s and 2000s thresholds that represent changes of behaviors we noticed in our sample.

Table 9. Seven sequence patterns and their continuous variables

Clusters		Number of operations	Speed of operation[1]	Speed of expansion[2]	Coefficient of variation of number of countries	Coefficient of variation of number of operations
1	2	-.195	.085	.212	-.149	-0.057
	3	-3.595**	.315***	.486***	-.156**	-.184***
	4	.283	.130	.019	.009	-0.049
	5	-3.995	.089	.328	-.166	-0.031
	6	-5.338**	-.072	.123	-.214**	-0.164
	7	-3.052	-.040	-.087	-.146	-.321***
2	1	.195	-.085	-.212	.149	0.058
	3	-3.400	.230	.274	-.007	-0.127
	4	.478	.045	-.193	.158	0.009
	5	-3.800	.003	.116	-.017	0.026
	6	-5.143*	-.157	-.0890	-.065	-0.106
	7	-2.857	-.126	-.299	.003	-.263**
3	1	3.595**	-.315***	-.486***	.156**	.184***
	2	3.400	-.230	-.274	.007	0.127
	4	3.878**	-.185*	-.467***	.165**	0.135
	5	-.400	-.226	-.158	-.010	0.153
	6	-1.743	-.387**	-.363	-.059	0.020
	7	.543	-.355**	-.573**	.010	-0.136
4	1	-.283	-.130	-.019	-.009	0.049
	2	-.478	-.045	.193	-.158	-0.009
	3	-3.878**	.185*	.467***	-.165**	-0.135
	5	-4.278*	-.041	.309	-.175	0.018
	6	-5.621**	-.201	.104	-.223**	-0.115
	7	-3.335	-.170	-.106	-.155	-.272***
5	1	3.995	-.089	-.328	.166	0.031
	2	3.800	-.003	-.116	.017	-0.026
	3	.400	.226	.158	.010	-0.153
	4	4.278*	.041	-.309	.175	-0.018
	6	-1.343	-.160	-.205	-.048	-0.133
	7	.943	-.129	-.415	.020	-.290**
6	1	5.338**	.072	-.123	.214**	0.164
	2	5.143*	.157	.0890	.065	0.106
	3	1.743	.387**	.363	.059	-0.020
	4	5.621**	.201	-.104	.223**	0.115
	5	1.343	.160	.205	.048	0.133
	7	2.286	.031	-.210	.068	-0.157
7	1	3.052	.040	.087	.146	.321***
	2	2.857	.126	.299	-.003	.263**
	3	-.543	.355**	.573**	-.010	0.136
	4	3.335	.170	.106	.155	.272***
	5	-.943	.129	.415	-.020	.290**
	6	-2.286	-.031	.210	-.068	0.157

Notes:
*p<0.1, **p<0.05 and ***p<0.001
[1]Average number of operations per year; [2]Average number of countries per year

We interpret each sequence pattern from descriptive variables of each cluster. Descriptive variables from Tables 8 and 9 reveal that the clusters differ significantly in nine characteristics (country of origin, age at internationalization, geographical scope, year of the first international operation, speed of expansion and operations, number of operations, coefficient of variation of operations, and coefficient of variation of countries). Descriptive variables and sequence characteristics from figure 1 and table 7 led us to name the seven clusters *serial acquirers*, *late acquirers*, *sequential acquirers*, *opportunistic internationalizers*, *contractual internationalizers*, *collaborative internationalizers*, and *wholly owned internationalizers*. Characteristics of these clusters are presented below.

Cluster 1 – Serial acquirers. *Serial acquirers* first adopted an acquisition strategy and, over time, keep doing acquisition (see table 7, cluster 1; figure 1, chronogram - 1). In this cluster, most of the 41 firms come from China (11) and Russia (10). Twenty-one of them were more than six years old when they conducted their first operation. The geographical scope is mainly global and 80% of the first operations were concluded after 2000. In terms of speed of expansion and operations, *serial acquirers* are faster than the average of the sample and significantly more rapid than cluster 3 (*sequential acquirers*). The average number of operations for this cluster is 5.80, which is significantly lower than clusters 3 and 6.

Serial acquirers are more aggressive than other EMNCs because they primarily use a risky mode of entry, they are rapid, and their geographical scope is global. In terms of age at internationalization, this cluster is balanced (no specific trend is observed). In addition, their behaviors cannot be considered as recurrent because they did not conduct a lot of operations (in terms of total number of operations over the period and of the coefficient of variation). This type of trajectory echoes a specific learning dynamic pushing firms to adopt a unilateral and explorative strategy. By favoring acquisition, these firms manage to quickly transfer knowledge to the headquarters (Li, 2010). Global geographical scope reinforces this learning dynamic.

Cluster 2 – Late acquirers. This cluster gathers seven firms presenting a similar behavior to serial acquirers with the peculiarity that these firms take a long time before concluding their first acquisition. Indeed, all of them are considered as old firms: 78 years old for the youngest, 117 for the oldest. Four of these firms come from South Africa and all the firms present a focused geographical scope. Their first operations happened mostly after 2000; the rest of the trajectories deal with at least four operations and three target countries, which reflects an important international commitment (see also the coefficient of variation). The speed of expansion and operations is close to the average of the sample.

Late acquirers are less aggressive than other EMNCs because, even if they primarily use a risky mode of entry, they are old and slow and their scope is clearly focused. However, their behavior could be considered as recurrent as they conducted many operations in many countries. This type of trajectory echoes a specific learning dynamic pushing firms to adopt a unilateral and explorative strategy. The large number of operations reinforces this learning dynamic (Li, 2010).

Cluster 3 – Sequential acquirers. Twenty firms compose this cluster. As shown in table 7 and figure 1 (cluster 3; chronogram - 3), these firms often use exportation over a long period of time; their sequence pattern is longer than other clusters (more than nine operations per firm on average) and their speed of expansion and operations is low. *Sequential acquirers* are mostly Russian (9) or Indian (6); their age at internationalization is balanced as with *serial acquirers*. Their geographical scope and the year of their first operation are also balanced. In addition, the number of target countries is higher than other clusters. We also note that the export strategy sometimes preceded an acquisition or a subsidiary in the same target country, but the reverse situation never occurred. This accumulated experience regarding modes of entry is aligned with a growing diversity (in terms of target countries) and with the length of the sequence; in other words, their behaviors can be considered as recurrent.

Sequential acquirers, like *late acquirers*, are less aggressive than other EMNCs because, even if they use a risky mode of entry, they always combine it with a less risky one. Moreover, sequences are quite long and underline the sequential approach adopted by these firms. Their behavior could be considered as recurrent as they conducted many operations in many countries in a more incremental way. This incremental trajectory reflects a unilateral and exploitative learning dynamic. The prudence that characterizes this behavior highlights a lack of location knowledge. The choice of mode of entry and the corresponding mean time (a long time to export) reflect the firm's choice to exploit its knowledge in a low-risk (slow manner) strategy.

Cluster 4 – Opportunistic internationalizers. As shown in table 7 and figure 1 (cluster 4; chronogram - 4), overall, the 23 firms of this cluster used all the existing modes of entry. Indeed, no particular timing is over-represented in this group, meaning that these firms tend to seize opportunities with no real underlying strategy guiding behaviors. Opportunistic location choices also characterize this cluster (the geographical scope is balanced). The weak ASW score of this cluster confirms the high level of heterogeneity within *opportunistic internationalizers*. The speed of expansion and operations is close to the average of the sample, and the average number of operations for this cluster is 5.52, which is less than cluster 1 and significantly lower than clusters 3, 5 and 6. All of the *opportunistic internationalizers* are more than 6 years old (42 on average). For the most part, they conducted their first operation after 2000 and come from Brazil (8) or India (7).

Opportunistic internationalizers could be considered as "aggressive" because their aim is to seize opportunities. However, they take time to operate internationally; this characteristic qualifies their behaviors. Moreover, their behavior cannot be considered as recurrent as they do not conduct a lot of operations (in terms of amount and the coefficient of variation). Erratic behaviors that characterize this cluster deviate from the prescriptive suggestion of Li (2010).

Sequence pattern analysis highlights that these firms are motivated by the exploitation as well as the exploration of knowledge: acquisition of knowledge is unilateral or bilateral.

Cluster 5 – Contractual internationalizers. This cluster is composed of five firms. It includes firms characterized by a preferred mode of entry related to contractual agreement (alliances, licensing, etc.) as shown by table 7 and figure 1 (cluster 5; chronogram - 5). Contractual agreement is rarely a step leading to a riskier mode of entry in the same country; rather, it is followed by an acquisition in a different country. This behavior illustrates a strategy based more on opportunities (like the *opportunistic internationalizers*) than a strategy based on trials and tests. It also explains the global geographical scope of these firms. Four of these firms come from Russia. Age at first operation is balanced. Most of the first operations are conducted after 2000 with a speed of operation close to the average of the sample. The speed of expansion is significantly lower than others. The average number of operations for this cluster is 9.80, which is higher than the global average of the sample.

Contractual internationalizers are less aggressive than other EMNCs of the sample because, even if they use a risky mode of entry, they always combine it with a less risky one (like *sequential acquirers*). In terms of age at internationalization and speed, this cluster is balanced. The geographical scope is clearly global. Their behavior could be considered as recurrent as they conducted many operations in many countries. *Contractual internationalizers* follow a bilateral learning strategy. More specifically, the modes of entry chosen (franchises, licensing, etc.) corroborate the fact that companies are seeking to deploy their knowledge internationally; the alliances made by these firms are tactical, the motivation is to exploit knowledge.

Cluster 6 – Collaborative internationalizers. Like the *contractual internationalizers, collaborative internationalizers* opted for a high mode of entry (in terms of commitment): equity JV and minority acquisition. Overall, these seven firms seem to mix collaborative and acquisition modes of entry (the major modes of entry in every pattern) over a global

geographical scope. They do not tend to target the same countries several times. In the same vein, the number of operations is very high (at least 4 operations, 11.14 on average in the cluster). Speed of operation is also very high. The major part of this cluster is Indian (3) or Chinese (2). The rest of the characteristics (year of the first operation and age at internationalization) are balanced.

Collaborative internationalizers are more aggressive than other EMNCs because they are rapid and their scope is global. In addition, their behavior is recurrent because they conducted a lot of operations (in terms of amount and the coefficient of variation). Like the contractual internationalizers, the companies in this cluster opt for bilateral learning. However, entry choice to pursue non-equity strategic alliance is more strategic (Li, 2010) and more engaging (Pan and Tse, 2000). This shows a motivation to explore international opportunities. These firms have a solid base of knowledge that will enable them to collaborate with international partners and explore new knowledge.

Cluster 7 – Wholly owned internationalizers. The seven firms from this cluster combined internal and external modes of entry associated with a high level of commitment and risk since they opted for creating subsidiaries or acquiring other firms (see table 7, cluster 7 and figure 1, chronogram - 7). As with the *collaborative internationalizers* cluster, speed of operations is rapid but the geographical scope is balanced. The average number of operations for this cluster is 8.86 and the first operation is mostly concluded after 2000. The *wholly owned internationalizers* are quite young and come from Brazil (3) or China (2).

Like the *serial acquirers* and the *collaborative internationalizers,* the *wholly owned internationalizers* are more aggressive than other EMNCs because they are young and rapid and their geographical scope is balanced. In addition, their behavior is recurrent because they conduct a lot of operations (in terms of amount and the coefficient of variation). These firms exhibit a unilateral and exploitative strategy. They exploit their knowledge through wholly owned strategies to fully control their subsidiaries. This behavior is reinforced by the mean time

spent in this state: *wholly owned internationalizers* take time to exploit their knowledge through their entity located abroad. However, it is interesting to note that this type of behavior is rare (Li, 2010) as it does not usually address a lack of knowledge (Ramamurti, 2009).

6. Discussion

Our research was aimed at analyzing the sequence patterns of EMNCs that pursued a whole internationalization trajectory. The analysis of sequence patterns of EMNCs is valuable because it stresses variations of learning mechanisms and their attached behaviors which lead to firms changing their internationalization commitment. Existing theories overlook these elements and cannot appreciate the manner in which each EMNC conducts its internationalization throughout its history. Sequence analysis was performed using the latest algorithms developed by sociologists from the University of Geneva (Gabadinho et al., 2011). Our results, based on a dedicated database of 4224 year-observations of 110 EMNCs, are summarized in Table 10. Sequence analysis revealed that EMNCs exhibit a taxonomy of seven kinds of distinct behaviors. The analysis of sequence patterns is conducted with the learning perspective which allows us to provide a more comprehensive explanation of the learning mechanisms of internationalization. This analysis enabled us to conceptualize learning as both a motivation and a strategic mechanism of internationalization (Li, 2010). Learning is a strategic mechanism as it impacts internationalization behaviors of firms (De Noni and Apa, 2015) by leading a firm to connect with appropriate firm(s). Learning is also a motivation as firms that operate in diverse international contexts through diverse modes of entry can learn and develop rich knowledge (Barkema and Vermeulen, 1998). Our results show that EMNCs from three clusters (serial acquirers, late acquirers, collaborative internationalizers) out of seven choose their mode of entry depending on their motives to seek novel and tacit knowledge (exploratory learning). We also found that three clusters (sequential acquirers, contractual internationalizers, wholly-owned internationalizers) out of seven are motivated by acquiring extant and explicit

knowledge (exploitative learning). The opportunistic internationalizers are motivated both by exploratory and exploitative learning.

Table 10. Seven sequence patterns and their internationalization behavior traits

	1 Serial acquirers	2 Late acquirers	3 Sequential acquirers	4 Opportunistic internationalizers	5 Contractual internationalizers	6 Collaborative internationalizers	7 Wholly owned internationalizers
Rapidness	Rapid	Slow	Slow	Slow	Slow	Rapid	Rapid
Distance	Global	Regional	Global & regional	Global & regional	Global	Global	Global & regional
Idiosyncratic behaviors	Not recurrent	Recurrent	Recurrent	Not recurrent	Recurrent	Recurrent	Recurrent
Learning	Exploratory and unilateral	Exploratory And unilateral	Exploitative and unilateral	All four	Exploitative and bilateral	Exploratory and bilateral	Exploitative and unilateral

Table 10 allows us to develop four original findings. First, our article stresses that there is a nascent debate about EMNCs internationalization behaviors. Some authors found that EMNCs exhibit rapid and recurrent behaviors while some others found that EMNCs show sequential and regional internationalization. Our results enrich this dyadic vision with opportunistic behaviors. More specifically, three of the clusters identified by our analysis (serial acquirers, collaborative internationalizers, and wholly owned internationalizers) share characteristics (they all have a significantly higher or balanced age at internationalization and a higher speed of expansion and operations) with springboard MNEs (SMNEs) as developed by Luo and Tung (2007). These firms exhibit recurrent behaviors in the sense that they are reproduced over time. We also found that these behaviors are systematic as homogeneity is very high within the clusters. These three clusters of firms represent half of our sample and may be likened to springboard MNCs. This result partially supports the work of Luo and Tung (2007; 2018). Some research posits that all EMNCs may be considered as SMNEs (Elango and Pattnaik, 2011; Gaffney et al., 2016), we suggest that future research should not confuse EMNCs and SMNEs. Our taxonomy suggests EMNCs also act in a sequential and regional manner. Late acquirers, sequential internationalizers (clusters 2 and 3), are raising their international commitment sequentially which reflect and confirm behaviors observed by recent

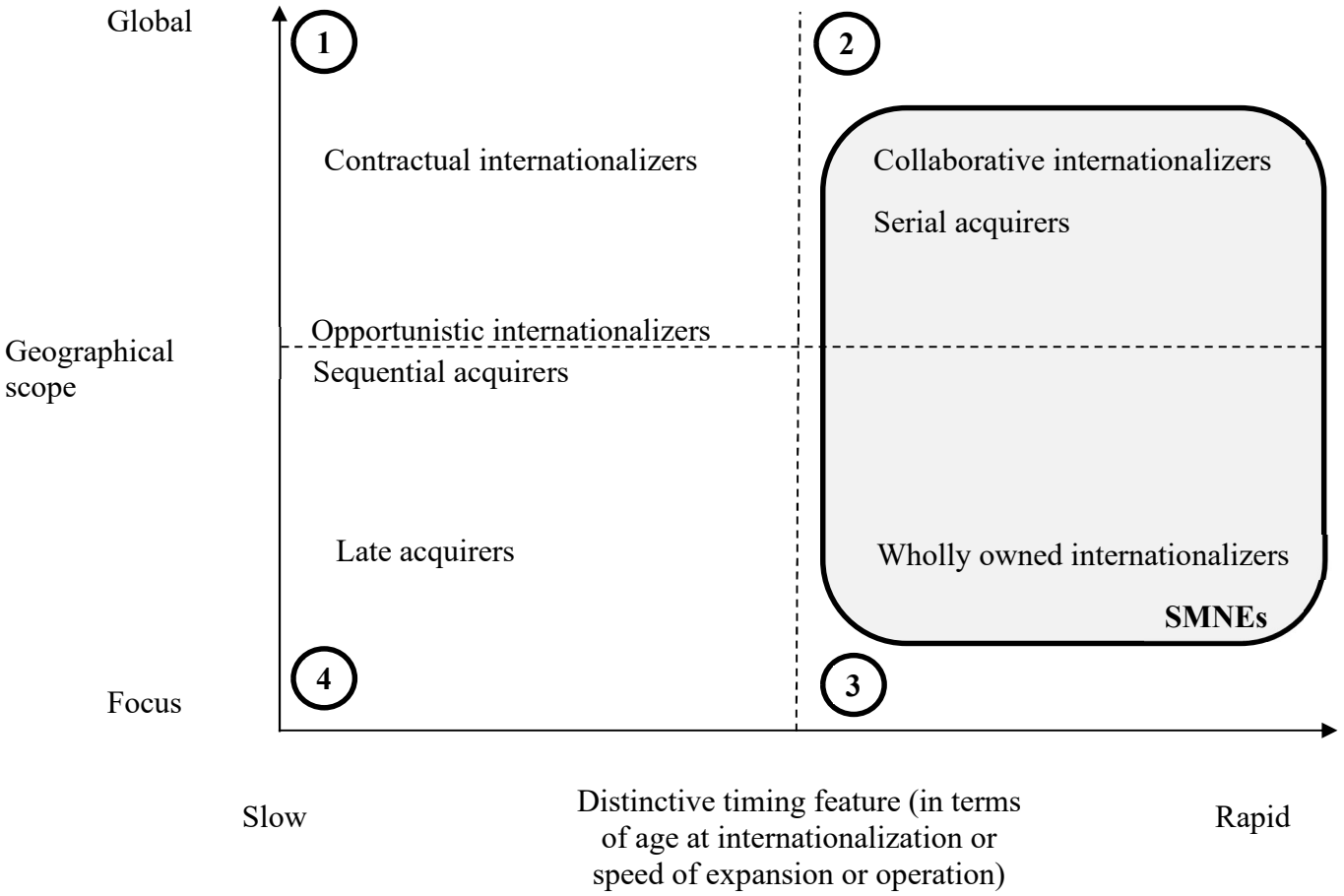
research (Ciravegna et al., 2016; Cuervo-Cazurra et al., 2018). Finally, our sequential analysis reveals that opportunistic internationalizers and contractual internationalizers are showing erratic behaviors (clusters 4 and 5). We believe that these types of behaviors reflect a negative side of the dynamic capabilities of EMNCs (Luo, 2000). By feeling at ease with flexibility, some EMNCs lack of long-term strategy. Current literature lacks analysis of these firms, which deserves more attention.

Second, our data allows us to refine the geographical scope of EMNCs. Unlike Satta et al. (2014), we found that not all clusters exhibit the same behaviors in terms of geographical scope. On the one hand, late acquirers and wholly owned internationalizers favor regional acquisitions, either through a focused strategy on a few regions or a global strategy mixing regional and global geographical scope (Lopez et al., 2009). On the other hand, serial acquirers, contractual internationalizers, and collaborative internationalizers have a much more diverse strategy based on a global coverage. The latter illustrate a will to build a stronger global ecosystem to foster exposition to opportunities (Reuber et al., 2018) whereas the former illustrate a need to reinforce their competitive advantage on a selected number of countries (Cuervo-Cazurra, 2008). Capabilities acquisition and market extension as presented by Luo and Tung in 2018 must be considered as two different motivations distinguishing types of SMNEs. Contrary to Luo and Tung (2007), we found that not all EMNCs invest in both developed and emerging markets (43 firms).

Third, the findings help us to propose a matrix to rank EMNCs according to their geographical scope and to the timing of their internationalization process (see Figure 2). Concerning the geographical scope, we argue that the scope of international commitment should be analyzed by distinguishing global (quadrants 1 and 2) and focus strategies (quadrants 3 and 4). Concerning the timing of internationalization, we address an ambiguity of the springboard theory and of the LLL framework by distinguishing speed of expansion and speed of operation from age at internationalization. We note that EMNCs do not show uniform

idiosyncratic behaviors regarding the timing of internationalization. For instance, some clusters contain young or balanced EMNCs with a high speed of expansion and operations (clusters 1, 6, and 7) while others contain old or balanced EMNCs with a low or balanced speed of expansion and operations (clusters 2, 3, 4, and 5). We note that there are no pure hybrid behaviors (old firm with high speed of expansion and operations and conversely). Clusters are positioned in the matrix depending on one outstanding feature of the group (e.g., firms belonging to a cluster with either a high speed of expansion, or a high speed of operations, or a a low age at internationalization, will be considered as rapid). Quadrant 1 is composed of contractual internationalizers. These EMNCs take time before most of their international moves. This long period of time enables them to strengthen their local assets and to broaden the geographical scope of their operations. Quadrant 2 gathers collaborative internationalizers and serial acquirers. Even if these two groups share a global trajectory in terms of geographical scope, they remain different in terms of recurrence. Collaborative internationalizers present erratic and aggressive behaviors which presuppose a lack of strategic vision. Conversely, serial acquirers are clearly strategic as they use recurrent modes of entry (major acquisition). Quadrant 3 contains wholly owned internationalizers. These firms opt for exclusive and recurrent modes of entry although, surprisingly, their geographical scope is focused which is not in line with the springboard theory but with other regional strategies (Ciravegna et al., 2016; Cuervo-Cazurra, 2008). One explanation could be that these EMNCs developed a very narrow strategy (they have both a preferred mode of entry and target country) to take advantage of their latecomer positions (Gubbi and Elango, 2016; Kotabe and Kothari, 2016). Quadrant 4 contains late acquirers. These firms build their international strategy from cautious and progressive moves in constrained areas, which is in line with the work of Lopez et al. (2009). The low number of firms in this cluster shows that this type of behavior is rather scarce.

Figure 2. Matrix of EMNCs' behaviors



Fourth, the learning perspective developed by Li (2010) allows us to deepen the underlying learning mechanism of the research of Mathews (2006) and Luo and Tung (2007; 2018).

The LLL framework is based on the notion of a link between a firm and a partner. This link is the basis to leverage the knowledge that the firm acquires. This process ultimately leads to organizational learning, necessary to a firm's international expansion. According to Mathews (2006), the starting point of this process is the external acquisition of resources through joint ventures and other forms of collaborative partnership (i.e., bilateral learning). Our sample shows that these types of strategies are followed by 12 out of 110 EMNCs. This result shows that Li's (2010) perspective is more complete than the very focused LLL framework as it also develops unilateral learning combined with explorative and exploitative motives.

Springboard theory does not tackle the learning perspective in depth. We identify that the three kinds of springboard MNCs (serial acquirers, collaborative, and wholly owned internationalizers) respectively follow exploration unilateral, exploration bilateral, and exploitative unilateral learning strategies. By doing so, we further the work of Luo and Tung (2007; 2018) and show that there are several rationales underlying EMNCs' behaviors.

7. Conclusion

This article is built on an original and inductive approach allowing us to identify and analyze the whole sequence pattern of EMNCs' internationalization following an interdependent longitudinal set of decisions. Our taxonomy allows us to make three contributions related to EMNCs' behaviors.

From a theoretical perspective, we address Luo and Tung's (2018) research agenda, providing more insights into the plurality and diversity of EMNCs. We also complement previous works which discuss motives, context, and industry incidence on EMNCs' behaviors without directly focusing their attention on sequence patterns. Our inductive method reveals seven idiosyncratic types of behaviors: half of our sample follows behavior predicted by the springboard theory (aggressive, rapid, and recurrent behavior) while the other half boasts other behaviors. In line with Li (2010), we found various motivations underlying EMNCs' behaviors: these firms choose their mode of entry depending on their motives to seek novel and tacit knowledge (exploratory learning) and to acquire extant and explicit knowledge (exploitative learning). We thus show the plurality of internationalization behaviors and suggest deepening theory dedicated to those firms.

Our results address the nascent debate pertaining to the internationalization trajectories followed by EMNCs. We enriched that vision and revealed that erratic and opportunistic behaviors exist. As this type of behavior is important in our sample, we urge further research

to analyze them and to develop new theoretical framework to do so. We believe that frameworks developed in entrepreneurship could complement existing ones.

From a methodological point of view, we enrich the EMNC literature using methods derived from the pioneer works of sociologists Abbott and Forrest (1986) and implemented by University of Geneva specialists. To our knowledge, this method had not previously been used to discuss EMNCs' internationalization. Our article shows that this method allows a deeper understanding of patterns, timing, manager choices, and strategies of these firms. In other words, our method answers recent calls to reinforce the temporal perspective and to understand the interconnectivity of the multiple international operations of EMNCs (Luo and Tung, 2018). In addition, our findings suggest that future works claiming to focus on SMNEs should carefully check the characteristics of their sample to ensure that they distinguish SMNEs from EMNCs. Finally, we also believe that this method would help to deepen theories pertaining to the internationalization process built on the observation of developed countries.

From a managerial perspective, we offer managers the opportunity to analyze the complete internationalization trajectories of their firms and to understand the main types of EMNCs' behaviors. This ultimately leads us to understand underlying elements of a firm's competitive advantage. Building on this analysis, managers in MNEs or EMNCs can more easily define the reference point of their strategy (Fiegenbaum et al., 1996) in line with past behaviors, which leads to superior results. Our matrix also helps managers to compare their internationalization behaviors with their competitors. This helps MNEs and EMNCs seeking to compete globally. Due to this matrix, both types of companies may better understand external elements underlying global competition and may better fit them with internal elements, which is essential to achieve a higher performance (Miles et al., 1974). Public officials like services promoting export (like chambers of commerce) and consulting firms also benefit from our results. By better knowing types of EMNCs' internationalization behavior, they are more able to wisely advise them about the learning outcomes of their internationalization strategies. Public

officials now can also better explain to managers the consequences of their choice of mode of entry on the learning development of their firm.

In spite of these contributions, our work contains some limits. First, we voluntarily selected EMNCs engaged in a whole internationalization trajectory. We thus created a selection bias preventing us from studying behaviors such as "born global" as some of the EMNCs do not choose the acquisition mode of entry. The second limit is due to the sequence method. This prevents us from using many attributes of modes of entry as the sequence matching process becomes exponentially complex and requires a very high sample size to produce stable results; this issue is typical of research into sequence patterns (Abbott, 1990; Sabherwal and Robey, 1993). The last limit relates to our sample of BRICSAM EMNCs, which means we excluded emerging markets found in some recent studies (O'Neill, 2011). We also deliberately chose not to include those countries. Our narrow field of study prevents generalizability of our results. We suggest that our results are tested on a broader sample.

These limits represent opportunities for future research. More specifically, future studies could link our taxonomy with various contextual conditions at the managerial, firm, industry, and country levels (Gammeltoft et al., 2010). For instance, in line with insights proposed by Shi and Prescott (2011) and Luo and Tung (2018), our sequence patterns could be analyzed considering CEO strategic vision (new CEO with new strategic ambition), firm performance, wisdom of control (recruitment of host-country nationals as members of the senior management team), or dynamic capabilities. Sequence patterns may be used to analyze recent studies about the influence of the home country (Cuervo-Cazurra et al., 2018; Hobdari et al., 2017) or to compare EMNCs with MNCs from developed countries. As Cuervo-Cazurra et al. mentioned, EMNCs provide various strategic responses to home-country effects dealing with specific patterns, location choices, and modes of entry. Decisions are embedded into trade motives (comparative advantage, comparative disadvantage, country-of-origin advantage, and country-of-origin liability) or foreign direct investment motives (institutional learning,

competitive learning, institutional escape, and competitive escape) which could further explain behaviors observed in this paper. Our taxonomy of internationalization behaviors allows us to identify different motivations and means of learning. However, our dataset prevents us from further analysis and from examining how the transfer of knowledge occurs.

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