

Temporal and Geographical Patterns of Internationalization – An Exploratory Analysis

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Abstract: Internationalization is of high relevance and has been discussed intensively. However, different internationalization paths have been proposed by theoretical models and have been observed in reality. In this study, we examine the internationalization path of 52 German firms over a period of ten years using comprehensive and rich data on all new ventures established by these companies within this period. We find four distinct patterns of internationalization and propose a stage model of internationalization based on these findings. Our results show different challenges for managers depending on the stage of internationalization and render interesting starting points for further research.

INTRODUCTION

International expansion is a topic on the agenda of almost every large company. There are many reasons for internationalization, including access to unique resources, access to growth markets, exploitation of economies of scale, or benefits from differences in factor costs (e.g., Zhao and Leary 2002; Kogut and Zander 1993; Kogut 1985; Dunning 1977). However, international expansion is a complex task. During international expansion, a firm starts to operate subsidiaries in countries with which it is unfamiliar and in which it

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is an outsider. The firm lacks knowledge for doing business in the new environment, for example, knowledge about customer preferences and competitors or knowledge about how to interact with local governments, unions, or employees (Vermeulen and Barkema 2002). This knowledge is gained through experiential learning by doing business in the new environment or by acquiring and integrating local units possessing the necessary knowledge (Forsgren 2002). Due to this requirement, some scholars propose an incremental steady path where firms increase their international involvement in subsequent small steps (e.g., Johanson and Vahlne 1977; Johanson and Wiedersheim-Paul 1975), and other researchers suggest a more revolutionary internationalization pattern with bursts of internationalization moves (e.g., Macharzina and Engelhard 1991; Knickerbocker 1973). Hence, despite more than three decades of research, there still remains inconclusiveness on the temporal pattern of international growth. Therefore, we conduct an explorative analysis on the international expansion paths of German firms to shed more light on the international expansion patterns. Our methodology is based on the approach of Maitland et al. (2005) using a clustering measure. In addition, we analyze the regional dispersion of cross-border activities. According to Rugman and Verbeke (2004) as well as Rugman and Brain (2004, 2003), most of the companies are regional. While their conclusions are primarily based on the status of firms and thus on static data, we expand the view by observing the regional dispersion over time.

To sum up, this paper seeks to explain possible patterns of internationalization in consideration of the two key dimensions, time clustering and regional dispersion. The choice of time and space as the two dimensions of analysis is based on the consideration that firms face two basic decisions when making foreign direct investments: 1) when and how fast to undertake cross-border steps, and 2) where to internationalize. We combine the two aspects of temporal and regional characteristics of internationalization paths to answer three questions: 1) What patterns do companies typically use to expand internationally? 2) What factors influence whether a company expands internationally with a certain pattern? 3) What can be learned from these patterns for the management of international expansion? To answer these questions, we structure the paper as follows. We first review the literature on internationalization, highlighting the importance of temporal and geographical aspects. Next, we present the data and research methods. Based on the findings of our quantitative and qualitative analysis, we discuss the identified patterns of internationalization and propose a stage model. We finish with a discussion on the implications for international management, limitations of our study, and concluding remarks.

LITERATURE REVIEW

A considerable amount of research has been conducted to explain different aspects of the phenomenon of internationalization such as location, mode, or timing of foreign market entry. Among these aspects, the temporal and geographical dimensions of internationalization have been discussed as key factors. Referring to Dunning (1998) and Eden and Lenway (2001), Flores and Aguilera (2007: 1187) state that the "[...] process of internationalization of MNCs and the rationale of their foreign location choice are at the core of IB research." Thus, given the decision to internationalize, besides the question of when and how fast the firm should take a cross-border step, it has to decide where to internationalize. While there can be questions about entry mode, for example, and other aspects of implementation, our study is focused on the temporal and geographical dimensions that constitute a useful framework to evaluate patterns of internationalization.

The importance of temporal aspects has been discussed by many researchers (e.g., Andersson and Mattsson 2006; Jones and Coviello 2005; Vermeulen and Barkema 2002; Kutschker and Baeurle 1997; Johanson and Vahlne 1977). According to Jones and Coviello (2005: 290) "[...] time is [...] fundamental to internationalization research in that each firm has a history composed of internationalization events occurring at specific points in time [...]" Since internationalization is comprised of changes in the international activities of a firm over time, it can be considered a dynamic process that implies a time sequence in which cross-border activities take place. Vernon's (1966) product life cycle model of internationalization is one of the first approaches to explain the internationalization process of firms. He assumes a gradual increase of cross-border activities and proposes a three-staged model in which firms export their products into developed countries first, intensify their export activities and begin to invest in other developed countries in the second stage, and finally invest in developing countries in the third stage.

The notion of an incremental expansion of international activities can also be found in the internationalization process model of Johanson and Vahlne (1977), which is based on the empirical work done by Johanson and Wiedersheim-Paul (1975). In the so-called "Uppsala-Model," Johanson and Vahlne (1977) argue that due to the required learning process concerning foreign markets, firms tend to expand internationally with an incremental steady path where they increase their international involvement in subsequent small steps. They put forward that companies first enter more proximate countries (i.e., countries with similar culture, language, business practices, and political systems) before they enter countries with higher psychic distance, and

that companies incrementally increase their resource commitment in foreign markets. In addition to the internationalization process model of Johanson and Vahlne (1977), other research, namely the so-called "innovation related internationalization models," also postulates an incremental internationalization process (Cavusgil 1984, 1980; Reid 1981; Bilkey and Tesar 1977). For example, Bilkey and Tesar (1977) propose a six-staged model of export behavior, where firms expand their export activities over time from "close" foreign markets to "distant" markets by means of achieving foreign knowledge. In his review of internationalization process theories, Andersen (1993) summarizes the incremental approaches and discusses both the "Uppsala-Model" and the "innovation related internationalization models." He states that they do not present any conditions that determine the initialization of the internationalization process or possible factors influencing the process. Some studies support the incremental increase of cross-border activities of firms. For example, Chang (1995) shows that Japanese companies first enter the US with those businesses in which they have the strongest competitive advantage to local rivals. In the following, they also increase their commitment in other businesses based on the experience gathered incrementally. Song (2002) finds that sequential foreign investments are firm-specific, evolutionary processes in which previous investments in capabilities serve as platforms for future upgrading of activities.

While the aforementioned theories and studies respectively identify an incremental, regular process of internationalization, another research stream indicates that firms internationalize rather in a revolutionary, irregular manner, "leapfrogging" one or more stages. For example, in the Gestalt Approach of International Business Strategy (GAINS) developed by Macharzina and Engelhard (1991) and based on the "Gestalt" approach of organization theory (Miller and Friesen 1980, 1978), the internationalization process is characterized by batch-wise, revolutionary changes between phases of stability. These changes are due to a misfit between managerial, organizational, and environmental variables, which lead to inefficient behavior. In addition, studies show internationalization paths that diverge from the incremental increase of psychic distance (Benito and Gripsrud 1992) and increased resource commitment (Hedlund and Kverneland 1985). Knickerbocker (1973) identifies expansion patterns, which also include multiple simultaneous investments in different countries. Recent empirical research has found very different patterns of the international expansion of companies, and it has been shown that firms' internationalization paths include both peaks of rapid, bursting expansion followed by periods of inactivity as well as incremental expansion processes (Maitland et al. 2005).

Furthermore, the internationalization debate is enriched by research on international new ventures (INV) or the so-called "born-global" phenomenon (e.g., Zhang and Tansuhaj 2007; Sharma and Blomstermo 2003; Moen and Servais 2002; Autio et al. 2000; McDougall et al. 1994). Contrary to the assumptions in the evolutionary approach that firms become international long after formation, the "born-global" firms "[...] are international from the time of their formation [...]" (McDougall et al. 1994: 470) largely due to globalization that includes factors such as deregulation, falling trade barriers, more homogenous customer needs, globalizing competitors, etc. (Laanti et al. 2007). They are particularly characterized by their use of resources and sale of outputs in multiple countries to derive significant competitive advantages (Oviatt and McDougall 1994). In conclusion, previous research does not give a uniform picture of the temporal dimension of internationalization. Because of the different temporal patterns of internationalization, no general pattern can be proclaimed.

While most of the studies have primarily focused on the development of international activities over time regarding various path variables such as the competitive situation in the host markets (e.g., Bogner et al. 1996; Chang 1995), cultural distance (e.g., Barkema et al. 1996; Benito and Grisprud 1992) or the political environment (Delios and Henisz 2003), little research has explicitly focused on the variables that characterize the temporal dimension of the internationalization process such as the regularity or speed in which firms internationalize. These characteristics are picked out in recent studies as central issues (e.g., Hutzschenreuter and Voll 2008; Wagner 2004; Vermeulen and Barkema 2002). For example, Vermeulen and Barkema (2002) suggest that multinational enterprises with an expansion process that is balanced in terms of speed, scope, and regularity stand to benefit more from internationalization. They show, in particular, that the regularity in which firms establish new foreign subsidiaries has an impact on the potential benefit firms get from international expansion. They also reveal that the geographical dispersion of the international activities affects profitability, highlighting the importance of the geographical dimension, which will be discussed in the following section.

Besides the temporal aspect, the decision of a firm to internationalize simultaneously implies the question of where the firm will operate. The importance of the geographical dimension of internationalization has been discussed by many researchers (e.g., Flores and Aguilera 2007; Galan et al. 2007; Kaynak et al. 2006; Erdal and Tatoglu 2002; Pantzalis 2001; Zaheer and Manrakhan 2001; Zhao and Zhu 2000; Dunning 1998, 1980, 1977). Firms are facing increased competition due to the consequences of globalization, such

as the falling of trade barriers, the reduced costs of transport and communications, and the integration of capital markets (e.g., Wiersema and Bowen, 2008; Gupta and Wang 2004; Lemak and Arunthanes 1997). In this context, Galan et al. (2007) postulate, that "[...] the new competitive landscape requires managers to be constantly prepared to reach decisions on the choice of the most advisable host countries for locating such investments. In fact, it is currently believed that the location decision in foreign direct investment (FDI) is probably one of the most common and key decisions, yet at the same time one of the most complex, that most managers in any country must take, especially MNE managers." (Galan et al. 2007: 975). However, firms expanding in foreign markets are confronted with unfamiliar demand characteristics and different competitors, suppliers, and partners (Barkema and Vermeulen 1998). Most difficulties are created by distance. According to Ghemawat (2001), distance does not exist only in the physical sense, but also implies economic, institutional, and cultural elements. Thus, firms expanding in markets that are geographically distant from their home country may face different economic, institutional, and cultural settings. At the same time, the environment becomes more complex for those firms because they have to handle a higher number of different external elements simultaneously (Scott 1992). Recent research has proposed that most companies pursue regional strategies focusing on their home region instead of global strategies and that relatively few companies are truly global companies (Rugman and Verbeke 2004; Rugman and Brain 2004, 2003). However, this research has primarily taken a static perspective and has looked at the status of companies in a specific year. Therefore, the question remains how companies reach this status and why some firms obviously are willing and able to become global companies while others stick to regional strategies. Furthermore, Rugman and Verbeke (2004) consider three regions in their study, namely the markets of NAFTA, the European Union, and Asia. A more detailed segmentation of regions could help give a more differentiated picture of the internationalization patterns of firms.

Only in very recent research have the first attempts been made to combine geographical and temporal aspects. For example, Hutzschenreuter and Voll (2008) identify "added cultural distance" as a source of complexity resulting from the location choice, and they show that the level of added cultural distance taken on by international expansion moves per unit of time and variations in that level within particular time periods have negative effects on firm performance. According to this, the geographical scope, as well as the interrelated aspects concerning distance between the home market and the foreign markets and the dispersion of the cross-border activities, respectively, represents a critical issue with regard to the internationalization of firms. However, these issues resulting from the "where to" decision in inter-

nationalization are not per se problematic for the internationalizing firm; it also depends on the "when and how fast" decision as to whether a firm is able to handle the complexity associated with the choice of location.

In summary, the literature review highlights both the importance of the temporal dimension and the geographical dimension of the international expansion of firms. Although a multitude of research has been done on the internationalization process, no clear results have been derived. In addition, little research has explicitly paid attention to temporal characteristics of the internationalization process. Therefore, we analyze in our explorative study the regularity of internationalization activities as a major variable of the temporal dimension. Furthermore, we take into account regional dispersion as another important part of the internationalization pattern and expand the concept of 'regionalism' (Rugman and Verbeke 2004) using the construct of regional dispersion over time, thereby taking a dynamic view. By inquiring the reasons for certain internationalization patterns, we also address Andersen's (1993) call for more scholarly attention to the question of why internationalization takes place.

EXPLORATIVE ANALYSIS OF INTERNATIONALIZATION PATTERNS

Data Considerations

The data used to explore the possible patterns of internationalization and their reasons must meet two major requirements. First, we need data on international expansion for a considerably long period of time. Second, the data has to be rich, exceeding the purely quantitative data that can be extracted from commercial databases. Analyzing annual reports seems to be a solution for gathering this kind of data. On the one hand, it contains the necessary in-depth information. On the other hand, a questionnaire as the only alternative would make it improbable to gain the necessary information for a long period of time.

Therefore, we examine the international expansion by foreign direct investments of 52 German-listed companies from the HDAX segment of the German Stock Exchange. The HDAX contains 110 firms and is a combined index consisting of the main indices of the German Stock Exchange (DAX30, MDAX, and TecDAX). We choose our sample starting with all companies that have been included in the HDAX segment in at least one point of time between the initial composition of this index in 1994 and the end of our analysis in 2004. We choose this approach to capture companies that declined and are removed from the index, as well as companies that were established or grew and were included for all or part of the ten-year period (Hutzschen-

reuter and Voll 2008). From the resulting list of companies, we exclude all financial institutions and retailers (45 companies) as well as eight cross-listed non-German firms. Out of the remaining 129 companies, 21 companies had merged or were taken over and, therefore, could not be contacted directly. We contact all remaining firms and request historical annual reports since 1985. Moreover, we compile historical annual reports for both active and non-active companies from different public archives for the same period. During the data collection, it becomes obvious that many companies are not able or willing to provide their reports for the time prior to the mid-nineties and that public sources are fragmentary. Overall, choosing a period of ten years is the best tradeoff between sample size and period length. Choosing this period, we end up with 52 companies for which we were able to compile annual reports. From these annual reports, we extract rich data and case descriptions on the status of the companies in the beginning of our period of analysis, as well as on all new ventures of these companies during our period of analysis.

Basic Patterns of International Expansion: Regularity and Regional Dispersion

To answer our first research question on the specific patterns of internationalization that may exist, we look at two dimensions of the internationalization path of the companies in our sample: the temporal dimension and the geographical dimension.

To analyze the regularity of the expansion process as a major part of the temporal dimension, we measure the temporal clustering of establishing new international subsidiaries using a clustering measure based on statistical process control. This approach is introduced and thoroughly described by Maitland et al. (2005). In essence, we construct a measure that identifies inter-temporal clustering of new foreign subsidiary formation based on deviations from the average ten-year rate of new subsidiary formation and deviations in the annual rate from pre- and post-year rates. Greater deviations indicate more clustering of activity (sporadic expansion).

To construct this measure, we plot a chart for every company that shows the number of new foreign subsidiaries per year. We then calculate the ten-year mean of the number of new subsidiaries per year and the standard deviation of the number of subsidiaries per year and add the following seven lines to the charts: mean, mean \pm one standard deviation, mean \pm two standard deviations, and mean \pm three standard deviations. We then assign scores to each year for a company, determined by the distance of the number of new subsidiaries in a specific year to the mean as well as by the contribution of the year to a bunching pattern. Assigning points captures the within-year

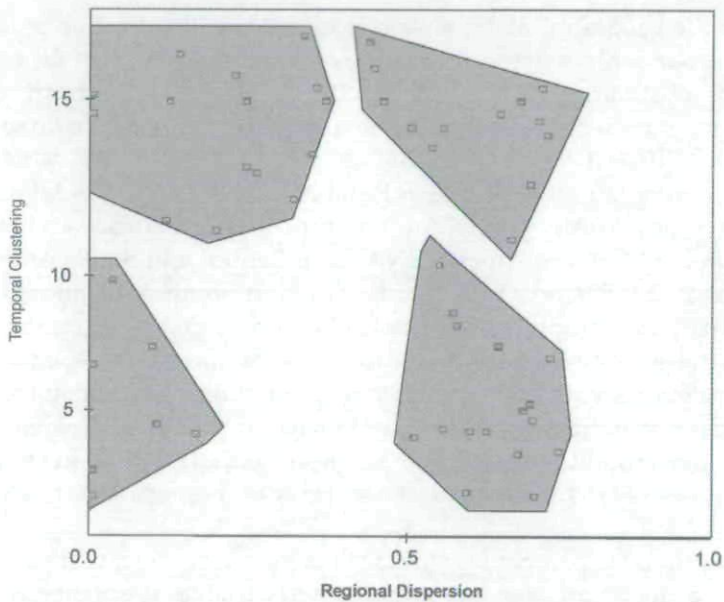
variation of the number of new subsidiaries. However, to examine a possible temporal clustering, each year has to be seen with regard to the years next to it. Therefore, for all consecutive years on the same side of the mean, the points for each year are added to the points from the previous year. The accumulation ends when a year sits on the opposite side of the mean and the mean is crossed. Obviously, this measure is relatively complicated and not extraordinarily intuitive. However, it has some important advantages compared to simpler measures. First, this measure is independent from the total number of new foreign subsidiaries of a firm. Second, it does not only capture the overall variation of the number of subsidiaries per year, but also takes into account the variation between consecutive years.

To analyze the geographical dimension of the internationalization paths of the firms in our sample, we compute the regional dispersion of all newly established subsidiaries. This is calculated as a Herfindahl entropy measure using the number of new subsidiaries in different regions. To do so, we define seven different regions, based on geographical proximity, economic and political integration, as well as cultural blocks. In detail, we define the following regions: Western and Central Europe; Eastern Europe and South Eastern Europe; Northern America (NAFTA); Central and South America; Eastern and South Eastern Asia; Middle East and South Asia; and Africa. We work with an entropy measure instead of a pure count of countries or regions, as the entropy measure is able to reflect the spread over the various regions in a better way. A measure based on pure counting would not reflect the importance that different regions could have on the firms. A single firm might be active around the globe with single subsidiaries, while in fact, it is still very home-region focused with the majority of its subsidiaries.

To identify groups of companies with distinct internationalization patterns, we conduct a cluster analysis based on the two variables describing the internationalization. We pursue a two-step approach where we first use hierarchical algorithms to define the number of clusters and their centroids. Then we use these results as starting points for a non-hierarchical cluster analysis (Ketchen, Jr. and Shook 1996). In our analysis, we use standardized values of our two clustering variables to avoid a bias due to the different scales of the two variables (Harrigan 1985). While there is no such thing as an optimal procedure for selecting the appropriate number of clusters in a hierarchical cluster analysis and such a procedure would leave much room to the judgment of the researcher, the inspection of dendogramms suggests a four-cluster solution. The four distinct patterns of international expansion can be described as sporadic regional expansion, sporadic dispersed expansion, continuous regional expansion, and continuous dispersed expansion. Figure 1 shows the plot of the companies in our sample and the clusters

identified. The firms with sporadic regional expansion in the upper left show irregular international expansion paths that are regionally focused. Sporadic dispersed expansion is found for the firms in the upper right, which have an irregular expansion path in that they invest in many regions. The firms in the lower left are building subsidiaries steadily and regularly, while they are focusing on a specific region and thus show continuous regional expansion. Finally, firms in the lower right also show a steady internationalization path but are building new subsidiaries in many different regions, thus, we observe continuous dispersed expansion.

Figure 1: Distinct Patterns of Internationalization



The findings of the cluster analyses are relatively insensitive toward the method used for defining the clusters in the hierarchical cluster analysis. We use Ward's minimum variance procedure, average linkage procedure, and centroid clustering procedure alternatively (Ketchen, Jr. and Shook 1996).

Quantitative Analysis of Similarities within and Differences between Patterns

As we have shown, cluster analysis reveals four distinct patterns of international expansion according to temporal clustering and regional dispersion. To learn more about the different expansion patterns, we analyze the differences in each pattern's speed of expansion and entry mode, two important

variables that have been discussed frequently in the literature on internationalization paths (Vermeulen and Barkema 2002; Wagner 2004).

To measure the speed of expansion, we calculate the ten-year average number of new foreign subsidiaries per year, showing the overall level of international expansion activity. To measure entry mode, we use two additional variables. Companies expanding with new subsidiaries face two basic decisions (Barkema and Vermeulen 1998; Chang and Rosenzweig 2001). First, they can either build a new subsidiary from scratch or they can acquire an existing entity. Second, they either can have total ownership of the new subsidiary or they can share the ownership with a partner. Therefore, we introduce the variable "acquisitions" to capture the first choice (Hutzschenreuter and Voll 2008). This variable is calculated as the percentage of entries by acquisitions on all entries within the period of analysis. Hence, one minus the percentage of entries by acquisitions yields the percentage of greenfield investments on all international expansion steps. To include the second aspect, we introduce the variable "total ownership," which is the percentage of international expansion steps with total ownership on all international expansion steps in the period of analysis.

So far, we have only taken path variables into account. However, the internationalization path described by these variables starts from a certain starting position. As this starting position may have an influence on the further path of internationalization, we also include several starting position variables into the analysis. First, we look at the internationality of the firms at the starting point. Companies that are already active globally might feel a lesser need to internationalize than 'late starters.' Also, globally active companies could have gathered knowledge in international environments that allows them to internationalize even further with lesser problems than a company that is less international (Barkema et al. 1996).

Therefore, we analyze the starting status of the companies at the beginning of our analysis period. We calculate starting internationality using an entropy measure (Herfindahl index) based on the number of existing subsidiaries in the different regions. We use an entropy measure instead of a measure based on a count of regions or countries, following the same logic as in the case of the path variable. A measure counting the regions or countries a firm is active in does not reveal how home-region oriented a firm is. In addition, we analyze the starting product diversity of the companies in our sample, as this might be interdependent from the starting internationality variable. For example, specialized firms in a niche might need to internationalize to grow further, while on the other hand, a conglomerate might have more market opportunities within its existing regional scope. We calculate the product

diversity with an entropy measure similar to the measure for internationality. We assign four-digit industry codes to each subsidiary of a firm and calculate the entropy using the number of subsidiaries of a company that were active within a specific four-digit industry code. Often times, the method of counting industry codes of a firm is used in the literature. However, looking at the firms in our sample, we strongly believe that the use of an entropy measure is appropriate to address the following aspects. We have firms with a clear focus on a single business but few subsidiaries in others, sometimes as a legacy from acquisitions. A pure count would describe these firms as highly diversified while they are in fact relatively focused. Other firms in our sample are active in relatively few different industries. However, their subsidiaries are almost spread evenly across those industries. With an entropy measure, these firms are described as the diversified firms they are. Overall, using the method of counting industry codes would not have made full use of our rich set of data where we were able to assign industry codes to each of the firms' subsidiaries. Finally, we also take into account the starting size of the companies using sales. Alternatively, we also use total assets. Table 1 shows the descriptive statistics of and the correlations between all variables discussed.

Table 1: Descriptive Statistics and Correlations

	mean	s.d.	1.	2.	3.	4.	5.	6.	7.
1. Temporal Clustering of Path	10.60	4.59	1.00						
2. Geographic Dispersion of Path	0.43	0.25	-0.14	1.00					
3. Average Speed	3.74	3.79	-0.09	0.10	1.00				
4. Acquisitions	0.61	0.27	0.32 *	-0.23	-0.25 *	1.00			
5. Total Ownership	0.74	0.21	0.12	0.21	0.14	-0.37 **	1.00		
6. Internationality Start	0.35	0.23	-0.11	0.48 **	0.01	0.10	0.32 *	1.00	
7. Product Diversity Start	0.65	0.24	-0.01	0.03	0.11	0.09	-0.13	-0.17	1.00
8. Size Start *	6,471.69	11,220.07	-0.11	0.10	0.21	-0.02	-0.08	0.17	0.33 *

* in Million Euros

** $p < 0.01$

* $p < 0.05$

As the correlations indicate, companies with a sporadic pattern of internationalization tend to use more acquisitions, as might be expected. Moreover, speed of expansion is surprisingly associated with less use of acquisitions and more greenfield investments. One reason for this might be that rapidly internationalizing firms are expanding based on intellectual property such as product innovation. They would then make use of this in their own greenfield investments and would not need to acquire other firms. Another possible reason might be that these rapidly expanding firms expect the integration of an acquisition to be more time consuming than establishing their own greenfield investment. Finally, companies with a higher percentage of acquisitions tend to establish more subsidiaries with partial ownership.

However, none of the additional variables is correlated with one of the dimensions leading to the four types of paths that we have identified.

Table 2 shows the means and standard deviations of the additional path variables for each of the four expansion patterns. We also conduct pair-wise comparisons with Mann-Whitney U-tests. The use of t-tests and ANOVA is not possible as these assume normal distribution, which was not the case. These comparisons indicate that firms showing continuous dispersed expansion are different from the other companies in one regard; they seem to expand with a higher speed and intensity. This is also confirmed by Mann-Whitney U-tests that compare the firms with continuous dispersed expansion with the rest of the sample and show a significant ($p < 0.05$) difference between the two groups. Neither of our two expansion pattern dimensions is correlated with any of the additional path variables and as Table 2 suggests, we cannot find any other significant differences between the clusters regarding these additional variables.

Table 2: Comparison of Path Variables

		Average Speed	Acquisitions	Total Ownership
Sporadic Regional Expansion	Mean	3.28	0.73	0.77
	s.d.	4.88	0.27	0.24
Sporadic Dispersed Expansion	Mean	3.24	0.62	0.76
	s.d.	1.90	0.23	0.12
Continuous Regional Expansion	Mean	2.63	0.59	0.61
	s.d.	2.25	0.26	0.27
Continuous Dispersed Expansion	Mean	5.13	0.49	0.75
	s.d.	3.77	0.26	0.17

Regarding the influence of the starting point on the firms' future expansion patterns, only one variable is correlated with any of the path variables: companies that show higher internationality in the first year of analysis have an internationalization path with higher regional dispersion later on. In Table 3, we show the means and standard deviations of the status variables for each of the four expansion patterns. As this table indicates, companies with an internationalization path of high regional dispersion seem to be starting from a position in which they are already active internationally. This is also confirmed by a Mann-Whitney U-test comparing regionally and dispersed expanding companies. As Table 3 already suggests, no other significant dif-

ferences between any of the four clusters could be found with pairwise comparisons.

Table 3: Comparison of Status Variables

		Internationality Start	Product Diversity Start	Size Start ^a
Sporadic Regional Expansion	Mean	0.30	0.65	5,799.70
	s.d.	0.28	0.30	10,988.01
Sporadic Dispersed Expansion	Mean	0.41	0.65	5,204.60
	s.d.	0.19	0.21	7,794.02
Continuous Regional Expansion	Mean	0.17	0.63	8,589.99
	s.d.	0.18	0.30	15,345.55
Continuous Dispersed Expansion	Mean	0.46	0.68	6,960.45
	s.d.	0.15	0.17	11,776.88

The industry in which a firm is active could have an influence on its pattern of internationalization. Therefore, we classify our firms by industry. We use the WZ-code, an industry code provided by the Federal Statistical Office of Germany, for this classification. The more common SIC-, NAICS- or NACE-codes are not available for the companies within our sample and/or the period of our analysis. Since we exclude all retailers and financial institutions from our sample, our sample firms are mainly active in manufacturing industries. Table 4 gives an overview of the industries our sample firms are active in according to the WZ industry classification.

Table 4: Industries of Sample Firms

Industry	# of Firms
Mining	1
Food	2
Textile & Clothing	2
Paper Products	1
Chemicals	9
Rubber and Plastic Products	2
Ceramics, Cement, Concrete	2
Metal and Metal Products	2
Machinery & Equipment	11
Electronics	5
Automotive Industry	4
Utilities	2
Construction	4
Transport & Telecommunication	3
Software	1
Health Care	1

As Table 4 illustrates, the firms in our sample vary considerably in terms of industry. However, we have a high percentage of firms in the chemicals and machinery & equipment industries, which is in line with the overall picture of the HDAX segment from which our sample was taken. We try to identify a possible influence of industry membership on the internationalization pattern of our sample firms. We could not detect any significant influence of the industry a firm is active in, neither separately on temporal clustering or geographical dispersion, nor on the cluster to which it belongs.

Qualitative Analysis of Similarities within and Differences between Patterns

To gain a deeper understanding of the companies in our sample, we also investigate each of the 52 firms by looking at their individual internationalization decisions and the context. Besides the analyses of the quantitative data on path and starting position, we also extract rich case descriptions from the annual reports. We scan all text within the reports and collect all statements regarding reasons for internationalization, reasons for specific entry modes, patterns, and any other information associated with internationalization. We

also go beyond the pure metric measures of regional dispersion and look at each individual portfolio of countries and regions. As this analysis reveals, firms with different patterns of internationalization seem to internationalize due to different reasons and with different motives.

Firms with *sporadic regional expansion* have almost no overseas investments in the beginning of our period of analysis, or they are focusing only on Germany and its neighboring countries. Their subsequent expansion path is also focused on these regions and only a few of these companies start to engage in investments outside this region during the subsequent ten years. These selected, infrequent overseas investments have very specific reasons. Some of these companies are suppliers for OEMs and follow the internationalization of these OEMs. They set up new international plants next to new production sites of their customers. Other companies within this group build subsidiaries overseas to get access to resources. Their overseas subsidiaries are mostly mines and similar supply operations. Besides these special reasons for overseas investments, internationalization of the companies within the group of focused clusterers is mainly driven by domestic pressures. Some are active in very difficult industries with fierce competition or are active in shrinking and cyclical industries hit by overall economic recession. Others face increased competition by firms from low cost countries entering their home market and attacking their position. These firms react to this pressure and are looking for ways to cut costs. This leads to investments in low cost countries in order to profit from low labor costs. Typically, these firms enter Eastern European countries neighboring or close to Germany, such as Poland, the Czech Republic, or Slovakia.

Firms with *continuous dispersed expansion* are active in many different countries and have many and important international operations. However, most of these activities are located within Europe. Nevertheless, many of these companies have subsidiaries in other parts of the world. The companies within this group pursue an active and aggressive strategy of internationalization. Many of them state international growth as a primary strategic goal. They describe international expansion and a strengthening of their global position as key to their success and even as crucial for their survival. However, this aggressive international expansion seems to require extensive financial commitment. While some of the firms seem to have deep pockets or are financing the expansion from cash flows generated in successful business units, others pursue an increase in equity capital in order to finance the aggressive international expansion. In the implementation of internationalization, many of the firms use a decentralized approach in which local headquarters drive the expansion in their respective regions. Another approach

to rapid internationalization, that can be observed, is the systematic acquisition of former partners, licensees, or independent distributors.

Firms showing *sporadic dispersed expansion* already have a strong international presence. In fact, many companies in this group have a very strong presence especially in markets outside Europe, mainly in the US. Many of them generate a higher percentage of sales outside Europe than within Europe. The reasons why these companies build new international subsidiaries are completely different from the reasons of the firms discussed before. These companies invest internationally in order to acquire specific knowledge or patents, to acquire brands, or to complete their product portfolio in specific markets. Moreover, they enter selected growth markets, mostly in emerging countries such as India or China.

Finally, firms belonging to the group with *continuous regional expansion* are strongly focused on Germany and its neighboring countries in the beginning of our period of analysis. While very few have subsidiaries in the US, the others mainly do business in Europe and some are even purely national companies. Overall, these companies also stay focused on these regions in the subsequent period and overall do less international investments than their counterparts within the other three groups. While these companies do not explicitly state reasons for this behavior, some conclusion can be drawn from their situation. For example, one company within this group is a mobile network operator that is only a few years old and invests heavily in infrastructure within Germany. Some other companies within this group undergo long and hard phases of restructuring in almost all areas of their activity. However, there are also some firms in this group that apparently do not attempt to further internationalize although there is no obvious reason why. These companies build new subsidiaries and stay more or less within the region in which they are already active.

DISCUSSION OF FINDINGS

Reasons for Different Patterns of Internationalization

Figure 2 summarizes what we have learned from the analyses of quantitative and qualitative data on the differences between and similarities in the four groups of internationalization patterns.

Figure 2: Comparison of Clusters

Temporal Clustering	High	Sporadic Regional Expansion <ul style="list-style-type: none"> • Mostly focused on Germany or Europe in the beginning • Expansion steps mostly within Europe, some exceptions to get access to natural resources or to follow customers • More acquisitions than non-clusterer • Active in difficult economic environment, cost pressure, internationalization to gain cost advantages • Failure of internationalization projects 	Sporadic Dispersed Expansion <ul style="list-style-type: none"> • Already globally active in the beginning, strong presence in US • Acquisitions to get brands, patents, or know how or to complete product range in certain markets • Entry into selected growth markets, mostly emerging countries
	Low	Continuous Regional Expansion <ul style="list-style-type: none"> • National companies or focused on European countries • Low level of international expansion 	Continuous Dispersed Expansion <ul style="list-style-type: none"> • International companies, but strong focus on Europe. Some single subsidiaries overseas. • Internationalization as main strategic goal • High rate of expansion, aggressive international expansion • Expansion steps all over the world
		Low	High
		Regional Dispersion	

The internationalization of firms showing sporadic regional expansion seems to be mainly driven by external stimuli. They either react to cost pressure and are forced to internationalize, or they take cross-border steps to meet the requirements of customers they are dependent on. Another reason is the access to natural resources they cannot find elsewhere. These firms do not seem to pursue a proactive internationalization strategy, but they go abroad when they think they have to and they do this with a concentrated burst of activity. Overall, they do not have much international experience, as in the beginning of the period of analysis; they only have limited international operations close to their home country. In fact, the following internationalization also happens in regions that are close to countries where they are already active. Only in some exceptional cases do they invest outside Europe if they follow customers or are looking for natural resources. Interestingly, among this group of firms with relatively little international activity, the companies that dare to take the step overseas seem to be the ones with the higher international experience. For some of the companies within this cluster, the high irregularity is caused by a period of inactivity that follows some unsuccessful internationalization steps. For some companies this failure is a result of unforeseeable hazard (e.g., a water inflow in a potash mine).

For others, this failure results from their own mistakes (e.g., a bad valuation of an acquisition target leading to heavy write-downs). These companies seem to have 'burned their fingers' on some internationalization projects, which results in caution and skepticism, causing a period of international inactivity.

While the firms showing sporadic regional expansion seem to be 'forced out', there is some evidence that firms with continuous regional expansion are forced to stay put. However, while the internationalization of the former is driven by external stimuli, the constraints that hamper the internationalization of the latter seem to be internal in nature. These companies seem to be stressed by other projects so they either do not want to or are not able to engage in internationalization projects. Moreover, they do not have much if any international experience that they could use for further internationalization. For some of these firms, there are no obvious reasons why they stay where they are. One possible explanation might be that they are in good shape and earn money in their current activities so they do not feel a strategic need to further internationalize.

If we look at the two groups on the right side of the matrix in Figure 2, we see that these companies differ from those on the left side by their higher status of internationality and their higher levels of international experience. Based on this international experience, these firms are internationalizing in more diverse regions than others. However, while the firms with continuous dispersed expansion are focused in Europe and have only a few subsidiaries outside Europe, the ones with sporadic dispersed expansion are active globally. This helps explain the differences in their internationalization path. While the sporadically and dispersed expanding companies have reached a global position, the continuously dispersed expanding companies are obviously trying to reach this global position. This is reflected by many passages in their annual reports stating that further internationalization and a strengthening of their positions outside Europe is a main strategic goal. To reach this goal, these firms expand aggressively and at a high pace.

The companies that already have reached a global position are obviously pursuing other goals. They are systematically strengthening their position in the different markets by acquiring companies to get access to their know-how, their brands, or their products. They do this sporadically whenever there seems to be an interesting target. These occasional acquisitions cause an irregular expansion pattern. Due to this approach, they rely mainly on acquisitions and exercise relatively few greenfield investments. Greenfield investments are mainly used to enter new markets that are perceived as promising growth markets. Overall, one could argue that their broad knowledge

due to their international experience enables these firms to pursue further internationalization. On one hand, it makes it easier to identify, acquire, and integrate potential international acquisition targets, but on the other hand, these companies use their international know-how and their strengths to deploy in new interesting markets with greenfield investments.

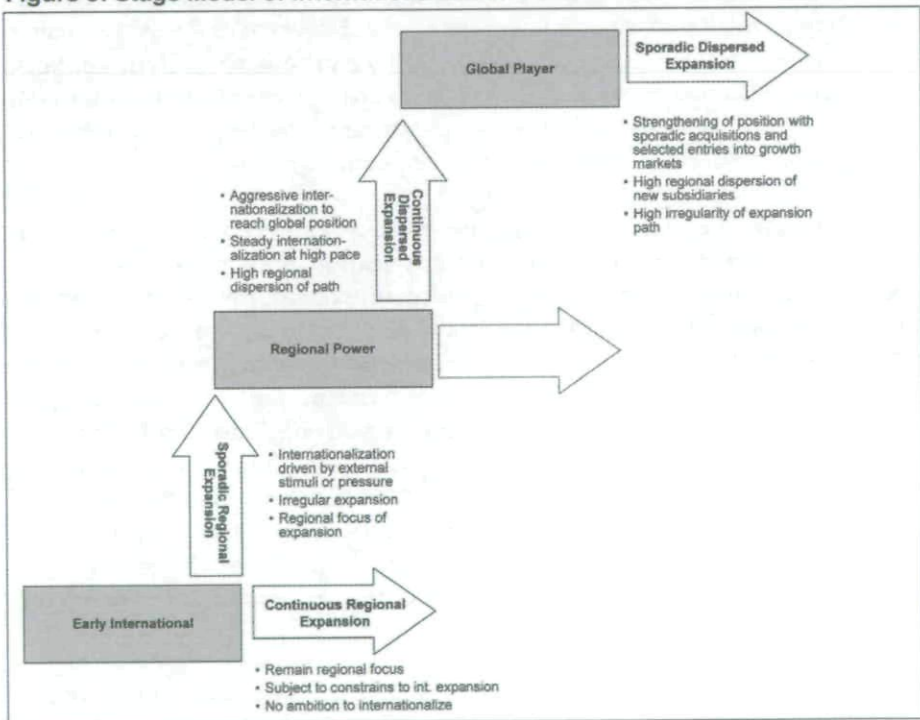
A Life Cycle of Internationalization Patterns?

Summarizing the discussion from the previous paragraphs, we see four different groups of companies that differ in degree of internationality, international experience, and strategic situation. The four patterns of internationalization seem to be the result of the different situations of the companies. In one group, we have companies with a low degree of international experience that are not engaged in many, if any, internationalization activities. This pattern results in a steady path on a low level of activity that is narrowly focused on the home country and its neighbors. In another group, we see companies with a similarly low degree of internationality that react to stimuli or pressure and engage in bursts of internationalization to meet their strategic needs. Since they have relatively little international experience, they mainly engage in neighboring countries of Germany. This results in an irregular pattern with high geographical focus. However, some of these firms - apparently the ones with a more international experience - also establish some subsidiaries overseas. In the third group, we find companies that have reached a strong position within Europe and in some cases already have some overseas subsidiaries. They have a considerable amount of international experience and they follow an aggressive internationalization strategy to strengthen their position outside Europe and to become a truly global player. This aggressive strategy results in a steady internationalization pattern with a high pace and a high geographical spread. In the fourth and last group, we see firms that have reached a strong global position. These firms pursue their internationalization activities to further strengthen their position by sporadically acquiring interesting international targets and by selectively entering promising growth markets. This strategy results in an irregular pattern with a high geographical spread.

If we look at the summary of our findings, we see that the firms with continuous dispersed expansion start at a position where they have strong international activities mainly in Europe and in some cases a few overseas subsidiaries. This position looks like the one that firms with sporadic regional expansion reach as a result of their internationalization pattern. These firms start with a few subsidiaries in Europe, and during their path they add more European subsidiaries and in some cases single overseas investments. Getting back to the firms expanding continuously and dispersed, these firms start an aggressive international expansion to become a global player. The

companies we observe in the group with sporadic dispersed expansion are this kind of global player. They start from a global position, and their internationalization pattern is a result of their attempt to strengthen this global position. Overall, these findings suggest a stage model of internationalization patterns where different patterns are a result of the stage reached by a firm and reflect the path towards the next stage. However, the companies with a focused and continuous path play a slightly different role than the other groups. Their path does not reflect a move from one stage to the other, but rather a desire or need to remain in their current core position. In some cases, this is due to the fact that they are not able to internationalize and instead they seem to restructure their activities in their core region. In other cases, they apparently just do not want to internationalize. The proposed stage model is summarized in Figure 3.

Figure 3: Stage Model of Internationalization Patterns



The challenges for the internationalizing firms vary in the different stages of internationalization and paths between stages. For the further internationalizing Early Internationals, a main requirement is to gain further internationalization knowledge and to implement early international projects. Within this group, we see several companies with failing international activities,

some where the companies picked bad acquisition targets due to lack of knowledge. For companies that become Regional Powers, the challenges are different. Knowledge is still important for their internationalization process, but they seem to have gained considerable internationalization knowledge of benefit. Instead, they face the problem of resource requirements to match their rapid pace of internationalization. This includes the need for financial and managerial resources to implement the expansion. Obviously, these firms look for ways to organize their internationalization resources as sparingly as possible. They delegate the expansion to local headquarters or they expand by buying players they already have done business with and so the integration should be relatively easy. For firms that have reached a global position, international expansion is used to secure this position. Expanding internationally is not the main driver for most of their acquisitions. They are, however, pursuing the acquisitions to strengthen their competitive position in certain markets. They are leveraging their broad knowledge base in search of acquisition targets all over the world. However, they are also using their broad knowledge to pick and then enter promising growth markets. Overall, the challenges for these companies are less specific to international expansion but include challenges like identifying new technological trends, arising competitors, interesting market opportunities, etc.

These results are consistent with the patterns of geo-product expansion found by D'Aveni (2001), based on his application of the principles of international relations and the history of multinational empires to large multinational corporations. He finds that global multinational firms create global "spheres of influence" – a collection of geo-product markets that give them substantial influence over and multimarket-contacts with other major global firms – in sequences, starting with building a strong "core". Subsequently, they build defensive "buffer zones" and offensive "forward positions" in markets necessary to protect their core markets against competitive threats. Finally, with secure cores and surrounding defensive and offensive positions, global firms move to "pivotal positions", which are in large or growth markets that will determine the "balance of power" among global competitors in the long run.

Conceptualizing internationalization as a stage model leading to a global sphere of influence, international expansion can be seen as a path-dependent process, which enhances the market power of the globalizing firm. The position of a firm influences its further path and affects the possibilities for further expansion, which influences the resource allocation decisions and patterns of how and where rivals will globalize (Hutzschenreuter et al. 2007). As knowledge is an important enabler of international expansion, each new subsidiary delivers new options for the expanding firm. This reasoning is in

line with the main arguments of the Uppsala-Model, which also perceives learning as an important driver and enabler for internationalization (Johanson and Vahlne 1977). However, we also see that the proposed incremental internationalization path cannot be generally observed. Instead, we see that there is no such thing as a general pattern of internationalization as already stated in the literature. Moreover, the patterns used are dependent on the stage and the accumulated international knowledge a company has reached and the competitive pressures it faces. For example, Wiersema and Bowen (2008) show in their study that firms confronted with heightening foreign competition in their domestic markets are likely to increase their international activities, in particular their geographical scope. Luo and Tung (2007) state that global competition leads multinational enterprises from emerging markets to expand internationally and enter the home markets of their global competitors. International expansion can also serve to avoid competition, for example, when non-dominant firms internationalize to avoid direct competition with industry leaders that have limited international activities (Mascarenhas 1986).

In our proposed stage model, we are missing a first stage. We start our model with firms that already have some international subsidiaries. Therefore, the question remains how firms reach the stage of moderate internationalization when coming from the stage of a purely domestic company. With this study, we are unfortunately not able to answer this question, as our sample does not contain any firms starting as a purely domestic company. This is probably due to the fact that we rely on a sample of listed companies and that these companies already have reached a certain size and already have established some international subsidiaries by the time they go public. As it has been argued that the incremental path proposed by the Uppsala-Model might especially be valid for firms in very early stages of internationalization (Johanson and Vahlne 1990), it could very well be that firms followed this incremental approach in the time prior to our analysis.

Implications for the Management of Internationalization

The results of our exploratory analysis have several implications for managers. For example, managers should bear in mind the path dependency of international expansion. Every step of internationalization generates knowledge and therefore new opportunities. It leads to a status of internationalization, which determines the possibilities of further expansion. Regarding the fact that the firms in early stages of internationalization seem to internationalize due to external stimuli and pressure, these early stages should be used to carefully gather internationalization knowledge, to assess the experiences made, and to draw conclusion from them. The knowledge base developed during these early stages can later be used for further internationalization

when the company does not only react but pursues an active and aggressive internationalization strategy. This active internationalization strategy in later stages poses different challenges than the earlier activities. As the examples in our sample shows, internationalization in these stages requires a lot of resources, both financial as well as managerial. Therefore, the main challenges are to provide financing and implement expansion in a resource sparing way. While one possibility to ensure the necessary funds is a capital raise, another possibility is to build a strong cash-generating position in the home region. This strong position can deliver the resources that are needed for further international expansion towards becoming a global player. Moreover, to reduce the strain of managerial resources and the necessary efforts, managers should find resource-sparing ways to implement foreign expansion. This might include the acquisition of targets that are familiar to the firms, such as of former alliance partners or independent distributors. In the last stage of internationalization, firms are already global players and are trying to secure this position. For management, the challenges in this stage are different than those earlier stages. To secure the firm's position, it needs to be able to pick the right acquisition targets to complement its portfolio and to select promising growth markets.

Limitations and Suggestions for Further Research

Although our results suggest a kind of stage model, our conclusion is neither drawn from panel data with firms all starting in the same place nor completely from longitudinal data. We study firms in different stages pursuing certain paths of international expansion, but we could not observe firms going through several stages of the proposed model. This could be the object of further research to examine firms over a longer period of time to validate the findings from this explorative study. Also, quantitative empirical analysis could test the proposed model or aspects from this model on larger samples. However, for the sake of an explorative study, we had to make a trade off between sample size, period length, and richness of data. The insights revealed from this explorative approach might now serve as a basis for further research.

The results of our explorative study are limited in terms of generalizability as our sample consists of firms from a single country. However, it has been shown that country environments effect internationalization. Porter (1990) explains internationalization as the result of competitive advantages that firms from specific industries in specific countries have due to the conditions in these countries. Moreover, research has shown that firms from smaller and open economies tend to internationalize more than their counterparts from larger countries (Benito et al. 2002). Also, we exclude firms from the financial services sector as well as retailers for the sake of comparability be-

tween the firms in our sample. However, these kinds of firms could show specific patterns of internationalization. Exploring the internationalization patterns of firms from other countries and from the industries excluded in this study and comparing them with our results would be interesting.

We draw our conclusions from data extracted from annual reports since this procedure promised to result in the best possible trade-off between richness of data and both number of firms and period length. However, statements in the reports might not necessarily be exhaustive and they could be framed to meet and shape expectations of investors. One possible alternative for gathering comparably rich data would be interviews. On the one hand, one could try to avoid framing biases by interviewing several executives per firm, this approach to data collection raises other problems. First, one would have to ask for events in the past, and managers might not fully recall these events and information would remain fuzzy. Second, there would be the danger of ex-post rationalization in this kind of approach. Last, it would hardly be possible to gather data on a sample large enough to identify different patterns of international expansion. However, further research might try to investigate single cases of companies showing one of the proposed internationalization patterns with other methods of data collection than extracting it from annual reports to derive a more detailed picture of the reasons for certain patterns.

In our study, we focus on internationalization with foreign direct investments. However, other modes such as exporting or licensing can be used to enter foreign markets. While the annual reports allow drawing a detailed and exhaustive picture of the foreign direct investments of the firms in our sample, the information given on other modes of internationalization is rather scarce. Nevertheless, these modes of internationalization might play a role within our context and within our proposed stage model. For example, exports can be a considerable source of learning and experience for an internationalizing firm (Johanson and Vahlne 1977). Therefore, firms could skip certain paths and move right on to a steady and speedy international expansion if they have gained knowledge through exporting and therefore do not need to rely on knowledge gained by first direct investments. Hence, including other forms of internationalization and studying their influence in the internationalization path against the background of the proposed model seems appropriate for further research.

CONCLUSION

In an explorative analysis of quantitative and qualitative data on the international expansion of 52-listed German firms, we find four distinct patterns of international expansion. The different patterns seem to reflect different drivers of internationalization, different goals of internationalization and are a result of different states of internationality in the beginning of our period of analysis. Overall, these results suggest a stage model of internationalization paths in which certain paths are used to move from one stage of internationality to the other. This helps explain the differences in the internationalization paths found by previous research that has shown steady, incremental internationalization as well as bursts of activity and periods of inactivity. Overall, our results suggest that the internationalization path is contingent on the stage of internationality a firm has reached and the stage it attempts to reach. Our results also underline the importance of knowledge for internationalization, as it has been suggested by many prior studies. Firms seem to be more able and willing to pursue further internationalization and expansion in more dispersed regions, if they already have a considerable amount of international experience. While firms in early stages are internationalizing due to pressure, firms with more experience start to pursue aggressive internationalization. Our results suggest that during internationalization, firms face different challenges depending on their stage of internationalization. Lacking knowledge and experience seems to be the major problem at lower levels, while financial and managerial resources seem to be the major issue in the transition from a local power to a global player. This barrier might explain why so many firms pursue a regional strategy instead of a global one. These firms might not have the resources to further expand. Overall, the results of this study not only show that challenges during internationalization change for managers, but also might serve as a basis for further research. This research might critically assess the proposed stage model in order to enrich, improve, or revise it.

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