

Evaluate SMEs Internationalization

Suggestion of a measure of degree of internationalisation

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Abstract— Open borders, removal of barriers and the development of Information and Communication Technology facilitate the internationalization of companies, including Small and Medium Enterprises (SMEs). These structures, characterized by the small size and lack of resources, are also interested in foreign markets. However, the internationalization of small entities differ from those of large companies. The aim of this paper is to propose a measure of internationalization adapted to SMEs. This measure is subsequently tested on a sample of 159 SMEs.

Keywords— *internationalization, SME, degree of internationalization*

I. INTRODUCTION

Our unit of analysis in this work, the SME represents the largest share in the industrial fabric of any nation. In fact, 90-95% of firms in a country are SMEs (OECD, 2007). They employ between 10 and 200 people. We have chosen to study SMEs for several reasons: the large number of SMEs in the global economic system, the agility and flexibility of SMEs, the small number of hierarchical levels or the ability to generate employment.

However, nowadays, globalization forces these SMEs to internationalize. Indeed, internationalization presents new opportunities to create value. When we know the importance of resources in the internationalization process, we have always said that internationalization is complicated for these SMEs. But this is not always the case. Indeed, Pacitto (2006) [1] argues that SME should not be reduced to a small business entity lacking resources but rather to study the capability of the company, i.e. "ability to acquire resources and transform skills (Marchesnay, 2000 [2], Julien, 2005 [3]) ". This same author therefore concludes that internationalizing SME increases their ability to learn and their ability to find opportunities. All this leads researchers to consider a new niche: the internationalization of SMEs and particularly how to measure this so-called internationalization.

To assess the internationalization of a company, two approaches are possible: either studying the internationalization process, or study the degree of internationalization. Most

previous studies focused on the degree of internationalization given the ease of obtaining data.

The objective of this work is a first step to a state of the art of measurement of internationalization. Thereafter, it will offer a measure of the degree of internationalization adapted to SMEs.

II. LITERATURE REVIEW

Interest in internationalization started from the 70 and 80 (Rialp Rialp & Knight, 2005) [4]. It was at that time that Dunning (1989) [5] defined internationalization as the "totality of cross-border activities, whether related to the production or trade of assets, goods or services, and occur within the same institution or between independent economic agents". For Beamish, internationalization is the "process by which companies feel simultaneously more concerned with international and, thereby, establish and conduct transactions with other countries". Whereas for Pacitto (2006), internationalization can be defined either as "a growing commitment process for corporates in international operations" or as "a process of adapting the business to the constraints of the international environment".

While the majority of researchers have found common ground on the meaning of internationalization, it is not yet the case for the measure of this so-called internationalization. Indeed, several measurement criteria were used in the work: the internationalization speed (Zucchella, Palamara & Denicolai, 2007 [6]; Acedo & Jones, 2007 [7] Zhou, 2007 [8]; Musteen Francis & Datta, 2010 [9]), the number of served countries (De Chiara & Minguzzi, 2002 [10]; Schüffel, Baldegger & Rossi, 2006 [11]), the degree of internationalization (Sullivan, 1994) [12] or the percentage of sales beyond the borders (Schüffel, Baldegger & Rossi, 2006; Contractor, Kundu & Kumar, 2007 [13]; Javalgi & Todd, 2010 [14]).

With this brief introduction to the concept of internationalization, we can argue that internationalization is an entrepreneurial act of exploiting international activities whose results are measurable. It is on this last point of measurability that we will look in this article.

A complete review of the indices used to measure or evaluate the internationalization of a company takes too long. It is for this reason that we decided to summarize in Table 1 in a non-exhaustive manner, the measures that have been used previously in the literature.

TABLE I. MEASUREMENT CRITERIA OF INTERNATIONALIZATION

Authors	Criteria label	Measurement criteria
Sullivan (1994)	Degree of internationalization	Measurement based on five indexes: <ul style="list-style-type: none"> Percentage of foreign sales as a percentage of total sales Percentage of foreign assets to total assets owned Percentage of foreign subsidiaries to total subsidiaries of the company psychic dispersion of international operations International experience of managers
Wagner (2004) [15]	Speed of expansion	Ratio of foreign sales to total sales
George & al. (2005) [16]	Internationalization	<i>Scale of internationalization</i> : measured by the percentage of profits from foreign markets. <i>Scope of internationalization</i> : measured by the number of countries with which the firm has direct relationship of export.
Cheng & Yu (2008) [17]	Internationalization timing and style	<i>Timing</i> : what year internationalization activities began. <i>Style</i> : <ul style="list-style-type: none"> Pace : input mode for the first international activities Scale : percentage of employees working exclusively on international activities Content : measurement from the ownership of the unit operating in a foreign country.
Kiss & Davis (2008) [18]	Internationalization speed	Measure based on the time that calculates the speed with which a company reaches a specific level of performance or a particular target.
Belaouina (2010) [19]	Degree of internationalization	Measured by an index of geographical dispersion (entropy index).

Rivas (2012) [20]	Degree of internationalization	Composite measure comprising the following three indices: <ul style="list-style-type: none"> The foreign sales as a percentage of total sales The assets owned abroad as a percentage of total assets. The number of foreign subsidiaries to total sectors represented in the sample.
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As we note in the table above, the measurability of internationalization differs from author to author. Indeed, some have focused on speed to define the type of international business, while others have focused on criteria such as the percentage of foreign sales or the number of subsidiaries created abroad. We will, in the following paragraphs, include the main measurement methods used to assess the internationalization of a company and subsequently present the most appropriate method to evaluate the internationalization of SMEs.

A. Internationalization Speed

The speed of internationalization is often considered one of the main topics in the literature on international entrepreneurship. This is both a measure based on the time and a proxy for international entrepreneurial behavior. According to Jones and Coviello (2005) [21], measuring the degree of internationalization involves measuring the speed with which a company manages to sell to any country, or when it reaches a certain level of international performance.

The speed of internationalization is defined as the time in years elapsed between the year of establishment of the company and the year of its first internationalization (Musteen, Francis & Datta, 2010). This time period will define the type of international business and, distinguish between traditional exporters following the theory of Uppsala (Johansson & Vahlne, 1977) [22] and the so-called International New Ventures after the theory developed by Oviatt & McDougall (1994) [23]. If this period is longer than five years, it will mean that the internationalization of the company is classic (i.e. an internationally rapid step by step). If, however, this period is less than five years, the company is called International New Venture, that is to say, a company newly internationalized" (a concept created by Oviatt & McDougall, 1994). Finally, if this period is less than a year, the company is then called Born Global.

However, it is important to remember that this measurement criterion of five years is not always the same for research in international entrepreneurship. Other studies have relied on a variety of other measurement criteria to distinguish a classic company, an INV or a BG. These other criteria are detailed in Table II.

TABLE II. CRITERIA FOR DISTINCTION BETWEEN INTERNATIONALIZED COMPANIES

Authors	Selection criteria
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Oviatt & McDougall (1994) ; Knight & Cavusgil (1996) [24]	Any company operating on the international scene at the time of or immediately after creation is considered an "early Internationalizing firm"
Bell, McNaughton & Young (2001) [25]	Every business begins its internationalization after a long period of local development, but international expansion is rapid once begun, is defined as "Born Again Global"
Zuchella, Palamara & Denicolai (2007)	Any company that is starting to export in the three years following its creation is described as "Early Internationalizing Firm"
Kuivalainen, Sudqvist & Servais (2007) [26]	Any company that generates 25% of its turnover abroad is described as "International New Venture"

However, the speed of internationalization is not sufficient to assess the degree of internationalization of a firm. As mentioned by Nunnally (1978) [27], the use of a single item to measure a construct can lead to biases and errors. It is for this reason that we will detail in the following paragraphs other criteria used in the literature to assess the degree of internationalization.

B. Internationalization degree

As the internationalization process is applicable only to large companies, we folded the degree of internationalization as a measure to operationalize this. Indeed, given the limited resources of a small business, it is very rare to find small widely dispersed geographically or having a rather complex international expansion scheme. There is very little work studying how companies internationalize (George et al, 2005. Lin 2012 [28]). However, some authors like Kuivalainen et al. (2010) [29], describe the degree of internationalization as a "snapshot" of the situation of the company at time t. These authors argue that by studying the degree of internationalization in that way, means studying international firm behavior, that is to say, its process or its internationalization strategy.

For two decades, various types of indices were used to assess the internationalization of the company. Sullivan (1994) was the pioneer to say that a single measure is not sufficient to assess the degree of internationalization of the company and it is necessary to use composite measures. Similarly, Gerpott & Jakopin (2005) [30] show that there is no indicator of internationalization that can be more effective than any other in terms of validity. Sullivan (1994) classifies these measures into three categories: those that measure the performance, those that measure the structure of internationalization and finally those that assess the attitude towards the internationalization of business. Table III summarizes the various measures used by Sullivan (1994) to assess the degree of internationalization of the company.

TABLE III. MEASURES OF DEGREE OF INTERNATIONALIZATION OF ENTERPRISES (SULLIVAN, 1994)

Degree of internationalization		
<i>Performance</i>	<i>Structure</i>	<i>Attitude</i>
Turnover abroad / Total turnover	Percentage of foreign assets / Total assets	International experience of senior executives (total years of experience)
	Number of foreign subsidiaries / Total number of subsidiaries	Psychic dispersion of international operations

C. Internationalization process

One of the most recent works on internationalization are those of Lin (2012), trying to find out how family companies expand in international markets. He argues that previous studies on the internationalization process did not take into account the three dimensions of this process: *pace*, *scope* and *rhythm*. The pace, which represents the speed of the process, is a measure based on time. This indicates the period of time required to achieve a given target (a very specific target or a specific performance level). The second dimension, the scope, assesses the geographical dispersion of internationalization. This lets you specify the number of countries with which the company operates and the degree of spatial concentration of activities of the firm. The final dimension, the rate which corresponds to the irregular pattern of foreign expansion, is defined as "the regularity of the process, or the rate at which new branches were created" (Lin, 2012).

Lin (2012) was inspired by Vermeulen & Barkema (2002) [31] to measure the three variables of the internationalization process of the company. These measure the speed of internationalization (internationalization pace) by the average number of subsidiaries created in foreign markets by year; geographical dispersion of internationalization (internationalization scope) as the number of countries in which the company created subsidiaries in a given year; and finally, irregular pattern of foreign expansion (rhythm internationalization) as the kurtosis of the first derivative of the number of foreign companies with a firm over time. Contrary to what we do in our work, Lin (2012) studied the internationalization of large family businesses.

III. MEASURING THE DEGREE OF INTERNATIONALIZATION OF SMES

There are two ways of measuring the internationalization of a firm. The first method is to use a single indicator. In this case, a large majority of authors agree that the most appropriate measure to assess the degree of internationalization of a small business is one that shows the share of exports in total sales (Reuber & Fisher, 1997 [32] 2011 Lindstrand et al [33]). But taken in isolation, this ratio is not sufficient to measure the degree of internationalization of SMEs. Indeed, it is essential

according to Nguyen et al. (2000) [34] and Basly (2005) [35] that internationalization takes into account both the attitudinal and behavioral dimension size of business. Composite measures are the second method used by researchers to assess the degree of internationalization of the company. It is for this reason that we chose six measurement criteria that are summarized in Table IV below which correspond to three aspects of internationalization according to Sullivan (1994): performance, structure and attitude.

TABLE IV. OPERATIONALIZING DEGREE OF INTERNATIONALIZATION VARIABLE

Degree of internationalization		
Performance	Structure	Attitude
How much was the part of your turnover abroad during this year?	How much was the part of your employees spending at least 50% of their time in international activities during this year?	What was the average number of years of international experience of your senior leaders such year?
In what was the share of profits from abroad during this year?	How much was the part of your assets abroad such year?	To which countries do you export your goods and / or services in this year?

As Sullivan (1994), we chose to evaluate the performance, structure and the attitude of the internationalization of companies. The inclusion of several indices to capture the degree of internationalization is justified by the fact that construct combining several approaches is more significant than a single indicator. For the first dimension, the performance of internationalization, we relied on ratios that measure the share of sales generated abroad (Sullivan, 1994) and the share of profits made abroad (George et al., 2005). The second dimension, structure of internationalization, consists of measuring the time spent by employees on international operations (Reuber & Fisher, 1997) and the ratio of the share of foreign assets (Sullivan, 1994). The final dimension, the attitude of internationalization, measures the share of foreign suppliers and the number of countries to which the company exports (Sullivan, 1994). The latter index indicates the extent (scope) of the internationalization of the company according to Lin (2012). Unlike Basly (2005), we chose to keep the attitudinal aspect of internationalization, especially the psychic dispersion indicator, since during our investigations, we found many SMEs exporting their goods in more than a dozen countries.

IV. TEST SCALE

To test the robustness of the proposed scale of the degree of internationalization, we administered these six questions to 159 SMEs from different industries. These were selected from a database from the CEPEX (the agency whose reference internationalized firms in Tunisia) and, according to a systematic sampling method.

The scale reliability is checked by Cronbach's alpha. The latter is 0.79, which allows us to continue to analyze the results.

To test the validity of the scale used previously, we used a Principal Component Analysis. Such a method has previously been used by Kuivalainen et al. (2010). These combine the six items measuring the degree of internationalization in a single measurement and, using a PCA.

PCA conducted on the six items measuring the degree of internationalization provides good results greater than 0.8 KMO and Bartlett significance equal to 0 (see Table V). The data collected enable us to pursue a principal component analysis.

TABLE V. KMO INDEX AND BARTLETT TEST

KMO		0,806
Bartlett sphericity test	<i>Khi-2 approved</i>	914,037
	<i>Df</i>	21
	<i>Sig Bartlett</i>	0,000

The quality of representation of each item is shown in Table VI below.

TABLE VI. REPRESENTATION QUALITY

	Extraction
Share of turnover generated abroad	0,812
Share of profits from abroad	0,878
Share employees spending at least 50% of their time in international activities	0,745
Share of assets abroad	0,702
Share of foreign suppliers	0,651
Countries to which the SME exports	0,555

The output total explained variance can show that it is possible to retain a factor. According to the Kaiser-Guttman rule, one factor should be retained. The latter would explain 78.53% of the variance. So, the six criteria of internationalization can be combined to measure the degree of internationalization of SMEs.

V. CONCLUSION

Based on psychometric criteria generally adopted by the scientific community, we can argue that the proposed method for measuring the degree of internationalization of the SME scale is reliable. The performed ACP shows in fact that the degree of internationalization of SMEs is a composite measure. This allows to synthesize all of the indicators. Thus, this will

be able to establish the level of internationalization in which the company is located. This approach will facilitate the comparison between different types of internationalized firms.

The main limitation of this work is of course the lack of verification of convergent and discriminant validity of the scale.

It would be interesting in future research to measure the degree of internationalization using criteria to the objective and subjective. Moreover, given the reluctance of entrepreneurs to provide figures on their SMEs, we folded the percentages only. We therefore propose to researchers integrating variable degree of internationalization in their research to try in the future to obtain figures rather than percentages.

Another very interesting track to follow would be to examine the internationalization of SMEs through multiple theoretical approaches. The authors could then rely on the perspective of social networks or institutional theory to define the degree of internationalization of SMEs.

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