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Maja Szymura-Tyc

University of Economics in Katowice

**MEASURING THE DEGREE OF FIRMS'
INTERNATIONALIZATION AT THEIR
EARLY STAGES OF INTERNATIONAL
COMMITMENT**

Abstract

This paper includes theoretical as well as methodological considerations concerning the measurement of the internationalization degree of companies at the early stages of their international commitment, which is true for the majority of Polish companies internationalizing their activity. It includes a review of methodological approaches concerning the measurement of the degree of internationalization and related internationalization models. These considerations constituted bases for preparing theoretical and methodological framework concerning the measurement of the degree of internationalization of firms in the initial phases of this process.

An original concept was presented of an internationalization index and the results of its application to measure the internationalization degree of 274 enterprises surveyed as a part of a research project, financed by the National Science Center: “Internationalization, networking and innovativeness of enterprises – cultural conditions”. The paper ends with the discussion of the scope of application of the proposed index and its limitations.

Keywords: *degree of firm’s internationalization, measurement concept, research results*

Introduction

The transition process of the Polish economy, including its involvement in international exchange, the accompanying processes of integration within the European Union and the developing globalization process meant that, since 1990, Polish firms have rapidly begun to internationalize their activities. A detailed analysis of the internationalization process of the Polish economy in the last twenty years (Gorynia, 2012) indicates that, although the internationalization degree of the Polish economy grew spectacularly, the ultimately achieved level of internationalization is still very low. This is confirmed by numerous empirical studies conducted by academic researchers as well as research institutes, consulting agencies and other organizations, which prove that the degree of internationalization of Polish firms is generally relatively low, slightly higher for small and medium-sized enterprises than for large firms (Witek-Hajduk, 2010; Cieřlik,

2010)*. This low degree of Polish firms' internationalization is expressed by the dominance of the least advanced forms of international expansion – mainly exports with a small share of more advanced forms of international cooperation (licensing, franchising) and very low level of foreign capital investments. What is more, Polish firms are rarely present in geographically and culturally distant markets and the European Union markets are the main direction of their foreign expansion, only occasionally – the overseas markets. Given the above, it may be presumed that the international commitment of Polish firms mainly represents the early stages of internationalization.

In the studies addressing the issue of the firms' internationalization degree in Poland simple structural internationalization indicators are most commonly used relating to the outward internationalization, i.e. the share of export in sales, market proximity, the sequence of entry into foreign markets and forms of internationalization (e.g. Gorynia 2002, Daszkiewicz, 2004; Gołębiowski, Dudzik, Lewandowska, Witek-Hajduk, 2008). Very rarely the subject of measurement is the inward internationalization that measures e.g. the share of import in purchases, the number of import markets and the distance separating them from the Polish market (Witek-Hajduk, 2010). Those individual indices are sometimes combined with each other, in particular, by reference to the markets in which the given activity is conducted (e.g. Dudzik, Gołębiowski, Lewandowska, Witek-Hajduk, 2008; Witek-Hajduk, 2010). Attempts to apply *composite indices* measuring the degree of firms' internationalization constitute the truly rare type of empirical research carried out in Poland. One of such research efforts measured the internationalization degree of Polish capital groups using the *transnationality index* (TNI)**. The conducted study revealed the lack of access to a lot of data necessary to calculate the index, in particular, the data on capital involvement and employment abroad. It was also difficult to calculate some other composite indices commonly used to measure the degree of internationalization of transnational corporations (TNCs) because of the unavailability of data on the number of foreign subsidiaries and countries in which the capital groups are present (Romanowska, 2011).

* A detailed overview of results of the direct empirical research on the internationalization of firms conducted in 1998-2008 in Poland is presented by M.K. Witek-Hajduk (2010). On the contrary, J. Cieřlik (2010) provides research results based on the analysis of secondary data, i.e. Polish official statistics on internationalization activities of firms registered in Poland, covering the 1989-2007 period.

** *Transnationality index* (TNI) is the arithmetic mean of the percentage share of foreign sales, assets and employment in the total sales, assets and employment.

The above-mentioned analysis of the empirical research conducted in Poland indicates that there is a methodological gap in the study of the degree of firms' internationalization at their early stages of international commitment, as in the case of Polish enterprises. The purpose of this paper is to fill this gap by presenting the theoretical and methodological framework for the measurement of the internationalization degree of such firms. The paper also contains a proposal for an internationalization index that can be used for this type of research and the results of its application to measure the internationalization degree of 274 enterprises surveyed as a part of a broader research project on relations between the internationalization, networking and innovativeness of firms.

1. Measurement dilemmas of the firms' internationalization degree

Measuring the degree of internationalization of firms has been a subject of interest for many reasons. Within different theoretical approaches, formulated at the macro- and microeconomic level, the relationships between the firms' internationalization degree and possible effects of their international activities such as innovativeness or efficiency are sought. And the opposite, the influence of economic policy of governments, the integration processes or emergence of new markets on the internationalization degree change may be researched (Ietto-Gillies, 2001). The researchers addressing the issues of internationalization degree measurement (Ietto-Gillies, 1998; Dörrenbächer, 2000) indicate that, behind each attempt to measure the internationalization degree, there are certain assumptions referring to the aim of the conducted research and a relevant theory which links the degree of internationalization with the investigated phenomena and processes. The aim of the conducted study and the adopted theoretical assumptions influence the choice of the researched subjects (e.g. TNCs or SMEs); the studied forms of internationalization (e.g. export, FDI) or the type of internationalized activity (e.g. marketing, manufacturing or R&D). The declared aims and arising assumptions also define wherever the studied feature of internationalization is the degree of its intensity (expressed as a relation between foreign activities to home ones) or the degree of its geographical extensity (determined by the spread of activities in the international market) and whether the research is static or dynamic (Ietto-Gillies, 1998).

Many indices measuring the degree of firms' internationalization have been developed. Depending on the purpose of research, simple individual indicators as well as multidimensional composite indices of internationalization can be

applied (Ietto-Gillies, 1998). These individual indicators can be structural, performance or attitudinal (Dörrenbächer, 2000). Structural indicators usually present a static picture of an aspect of firm's activity from the internationalization degree perspective (e.g. a number of foreign subsidiaries or countries of operation). Performance indicators show the effects of firm's internationalization in a certain field (e.g. total income from foreign subsidiaries), while attitudinal indicators represent the attitudes and behaviors of managers in the context of international activities (e.g. international experience of the top managers measured in years of working abroad).

Individual indicators of internationalization can be used then for the construction of more complex, composite indices. The most common indicators of internationalization widely used by UNCTAD in transnational corporations rankings is the already mentioned *transnationality index* (TNI) (UNCTAD, 1995) and the *geographical spread index* (GSI)*. The latter, based on the *transnational activity spread index* developed by G. Ietto-Gillies to assess the dispersion of foreign activities among different countries of the world, supplements the measurement of internationalization degree by the countries spread dimension (Ietto-Gillies, 2001). The popularity of TNI and GSI indices is determined by the fact that their structure is based on individual structural indicators, which makes them a relatively easy means to calculate the degree of internationalization of a large number of the most internationalized firms, particularly transnational corporations that make the necessary data for their calculation publicly available. The flaw of the above-mentioned indicators is that they focus only on those aspects of internationalization that are easiest to measure (i.e. export and foreign direct investment, the number of employees abroad) while ignoring many other factors that are considered relevant for assessing the achieved degree of internationalization of a firm within the contemporary internationalization theory framework.

On those grounds, not only the individual structural indicators, but also the performance and attitudinal ones are recommended for the construction of the more complex firm's internationalization indices. An example of such an index is the *degree of internationalization scale* (DOI) proposed by D. Sullivan (1994)**. The basic limitation of composite indices such as DOI, consisting of

* The *geographical spread index* (GSI) is calculated as the square root of the ratio of internationalization II (the number of foreign subsidiaries to the total number of subsidiaries) multiplied by the number of countries of operation.

** *Degree of internationalization scale index* (DOI) consists of three structural indicators such as the share of foreign sales, assets and number of subsidiaries in total sale, assets and number of subsidiaries; an indicator of cultural diversity (*psychic dispersion of international operations*) using the concept of the ten cultural zones (Ronen, Shenkar, 1985) and attitudinal indicator of international management experience (*top managers' international experience*).

structural, performance and attitudinal indicators is that they commonly require the use of direct empirical research aimed at obtaining more detailed information on various aspects of firms' international commitment, e.g. the internationalization forms and the scope of functions within a firm undergoing the internationalization process. Those indices are also more subjective in nature which results from the adjustment to the specific purpose of research, the nature of the business activity or industry and even the availability of empirical data that can be used in a study (Ietto-Gillies, 1998; Dörrenbächer, 2000).

Summing up the discussion on the selection of an indicator, and rules of construction of internationalization index it can be concluded that the most commonly used measures of internationalization are *individual indicators*, in particular structural ones, which is supported by their simplicity and relatively easy access to empirical data. The pointed out weakness of those indicators is their relatively low reliability resulting from the fact that they measure only one aspect of the firm's internationalization. The other flaws are lack of systematic control of measurement errors (particularly important in the case of attitudinal indicators), contingent influences (e.g. industry specificity or exchange rate fluctuations) and transfer-pricing manipulations (Dörrenbächer, 2000). *Composite indices* are considered to be more reliable in this context but their use is also associated with certain problems. Such a problem is the selection of *individual indicators* used to construct *composite indices* and an unresolved issue of weights, which are given to each individual indicator of internationalization. Ultimately, it is believed that "*there is neither single indicator nor an index that satisfactorily measures the overall degree of the internationalization of a firm*" (Dörrenbächer, 2000, p. 12). This implies the need to choose an indicator or index from the already known and used ones or design an own one. It is assumed that in the both cases the use of the measurement instrument should be related to the considered problem by the adopted variables (indicators, indices) and their weights. Then the problem that remains to be solved is the availability and reliability of empirical data and their comparability, particularly problematic when the research is of international scope.

2. Theoretical and methodological basis for measuring the degree of internationalization

One of the possible research assumptions adopted in the measuring of the degree of internationalization of firms is the presumption that a higher degree of internationalization of a firm may be related to e.g. the firm's innovativeness,

efficiency of operations, improved overall performance or the ability to gain competitive edge. With this assumption, it can be expected that the firm's innovativeness understood as the number of innovations, their newness or share in total sales may be affected both by the passive commitment to the international market (inward internationalization – e.g. imports) as well as an active one (outward internationalization – e.g. joint venture abroad). Similarly, the firm's efficiency (assessed by an increase in the sales or market share, a rise of profitability, etc.) may be the result of its outward internationalization (e.g. increase in the sales thanks to expansion to foreign markets) and inward internationalization (e.g. higher profitability as a result of outsourcing manufacturing operations to lower cost countries). Relations between the degree of internationalization and the above-mentioned phenomena may depend not only on the share of the foreign activity in the overall activity of a firm but also on the form of its international commitment (international exchange, international cooperation, foreign direct investments), the spread of markets and countries, as well as the international experience of a firm.

The above-mentioned dimensions of the firm's internationalization are extensively presented within the theoretical framework of the firm's internationalization models. Theoretical models describing the firm's internationalization process can be roughly classified into two groups: conventional models and unconventional ones (Gorynia, Janowska, 2007). From the point of view of the foregoing considerations, it is worth mentioning that these two groups of internationalization models differ essentially not only in the approach to the description of the internationalization process and the scope of their application. They also differ in terms of the conceptual and methodological assumptions for measuring the degree of internationalization resulting therefrom.

And so, having the conventional model of internationalization, namely the *Uppsala model of internationalization* (U-M), the Finnish models and the *innovation – related models* (I-M) as the theoretical framework for the degree of firms' internationalization measurement, it can be assumed that the assessment should take into account at least two dimensions of internationalization. The first one is a form of international commitment, not only limited to the forms of international trade (import/export) and foreign direct investments, but also including contractual and capital cooperation under the license agreements, franchising and others (Johanson, Wiedersheim-Paul, 1975; Johanson, Vahlne, 1977; Ramaswamy et al., 1997), both with regard to the outward and the inward internationalization of a firm (Welch, Luostarinen, 1993). Particular attention should be paid to exports, their share in the sales, organizational forms and structures

(Luostarinen, 1980; Welch, Luostarinen, 1988; Luostarinen, Hellman, 1993; Cavusgil, 1980; Wortzel, Wortzel, 1981; Czinkota, 1982) and the length of export experience of a firm (Bilkey, Tesar, 1977). The second key dimension of internationalization taken into account in the measurement concept should be foreign markets in which a firm operates. In particular, their number and both the physical and psychic distance that separates them from a home country of a firm, presuming that the greater the number of markets served and their distance from a home country the higher the degree of firm's internationalization is (Johanson, Wiedersheim-Paul, 1975; Johanson, Vahlne, 1977; Johanson, Vahlne, 2009). Since the conventional models assume that internationalization is a gradual, incremental and cumulative process, the particular role is played by time here. The basis for this model is the presumption that the degree of firm's internationalization increases as it evolves towards more advanced forms of international engagement over time and gradually broadens the spatial scope of international expansion. All these mean that in the conventional models of the internationalization the time flow is recognized as a factor increasing the cumulative effect of a firm's internationalization process.

In the non-conventional models of internationalization – the rapid internationalization models arguing against the sequential and evolutionary process of internationalization – time is still a critical variable but the internationalization degree of a firm is not a function of its length. Similarly, the choice of a form of business operations in the international market is not a consequence of the experience gained at an earlier stage of internationalization, but is adapted to the nature of the industry, market and firm's resources. A firm's internationalization process may be, therefore, more rapid and some stages of internationalization omitted (*leapfrogging*) (Hedlund, Kverneland, 1984; Sharma, Johanson, 1987; Grönroos, 1999). And finally – the number and distance of markets and countries do not have to rise incrementally as the next stage of internationalization is reached. This means that the measurement concept of the internationalization degree of firms internationalizing rapidly their business activities, omitting some forms of international expansion should take into account the various forms of internationalization, not focusing too much on export or any other form. Because the rapidly internationalizing firms (international new ventures, born globals, etc.) are entering many markets simultaneously (Bridgewater, 2000) within short time, ignoring the physical and psychic distance that separates them from a home country (Oviatt, McDoughal, 1994; Knight, Cavusgil, 1996; Bengtsson, 2004; Knight, Madsen, Servais, 2004), the market distance should be of special importance in the measurement concept, with a far less emphasis on the passage of time as a factor increasing the degree of firm's internationalization.

In addition to the process approach being present in the internationalization theory for almost forty years, a network approach to internationalization has developed lately highlighting some new issues relevant in the measuring of the degree of firm's internationalization. The basic difference is that researching the degree of firm's internationalization within the network approach requires both an individualistic treatment, which can be found in an earlier process approach along with an analysis of the network linkages, connecting a firm with its domestic and international partners, in particular, the contractual and capital relationships enabling a firm to enter foreign markets. The relationships within the international network in home and foreign markets being the source of market knowledge diminish the psychic distance and accelerate the internationalization of firm's activity (Johanson, Mattsson, 1988; Mathews, 2002; Håkansson, Johanson, 2001; Zuchella, Scabini, 2007; Fonfara, 2009). This means that, as in the previous models, the degree of firm's internationalization should be considered both from inward and outward internationalization perspective and encompass various forms of international commitment, especially the relationships based. An important dimension of internationalization to be measured from the network perspective is the geographical spread of markets and a network scope, in which a firm participates. Not without importance is also time, significant both in terms of the firm and entire network internationalization. Creation and development of an international network is, in fact, considered to be a cumulative process that requires gradual development of knowledge about the market, learning from other firms as well as development of possibilities of using network partners' resources. As a result of those activities, the development potential of the international network and the interdependence between different national markets increase, together with the degree of internalization of the networked firms (Gorynia, Janowska, 2007).

3. Internationalization degree of Polish firms – research results

3.1. Research objectives

The above methodological and conceptual considerations have provided the basis for an attempt to develop a composite index of the degree of internationalization of firms at their early stages of international commitment, which may be not easily accessed by the most popular indices like TNI or GSI (Romanowska, 2011). The research is a fragment of a larger project funded by the National

Science Center (NCN), entitled “Internationalization, networking and innovativeness of firms – cultural determinants”. The selected results presented here are the findings of the first stage of empirical research conducted in 2012, and dedicated to assessing the degree of internationalization, networking and innovativeness of the surveyed firms and the basic relationships among these phenomena.

The research objectives of this part of the study were the following:

- development of a measurement concept of a firms’ internationalization degree based on relevant theoretical and methodological foundations and general research aims;
- development of a composite index of the firms’ internationalization degree with regard to existing practices and experience related to its measurement in Poland;
- assessment of the surveyed firms’ degree of internationalization with a use of the designed index.

3.2. Research instrument, data collection, and sampling

The empirical data were collected through direct interview conducted by a specialist research agency. The instrument used in this survey was a structured questionnaire containing 22 questions of varying degrees of complexity, relating to three areas of the surveyed companies: internationalization, networking and innovativeness. In a significant number of questions, particularly those related to networking and innovativeness, simple and complex scales were used, mostly Likert-type in the range of 1-7. In addition to those questions there were also included 13 questions related to the firm itself (the type of a business sector and industry, the size of enterprise measured by the number of employees and the level of revenue, the form of ownership and the origin of capital, capital group affiliation), international experience of its management staff and the position and tenure of the respondents participating in the survey.

The method used for firms’ selection for the research was the non-probability purposive sampling. According to the research objectives for the survey were chosen firms established in Poland and involved in the international markets both in a passive (e.g. import) and active way (e.g. export). Irrespectively or simultaneously to international commitment, the firms were expected to demonstrate innovative activity. Firstly, the basis for creating a list of the surveyed firms were the rankings of the largest exporters and the most innovative firms published in Poland as well as lists of firms operating in special economic zones, mostly foreign companies from different countries. As a result, one third of the sample contained firms recognized in Poland as the most innovative and active in the international market. The rest of the sample were firms outside of

those ranking lists, but perceived as having at least one of the studied characteristics, i.e. internationalization and innovativeness.

The choice of firms to the survey was based on the principle that they should belong to both sectors, i.e. manufacturing and services, and various industries. In the research sample (N = 274), there were 54% of firms representing manufacturing including construction and 46% of service firms, altogether from 10 industries. The firms differed as to their size assessed by the number of employees so that 36.9% of the sample consisted of small enterprises, 41.2% – medium ones, and large ones – 21.9%. As much as 96% of the surveyed firms were private companies and the public ownership was represented by mere 2.2% of firms. When it comes to the ownership of capital – 67.5% constituted the firms of solely Polish capital, 12.8% of the firms represented foreign capital only and the rest of the companies – i.e. 19.6% – had mixed capital. In summary, it appears that the obtained sample can be considered as internally diversified in most essential dimensions and well suited to the research objectives.

Furthermore, the detailed analysis of the survey results showed that most firms constituting the sample have been present on foreign markets for 10 years only. Their share of exports in the total sales is less than 5 percent for 28, 50 and 65 percent of firms exporting to the EU markets, European markets outside the EU and non-European markets respectively.

The average number of markets on which the firms engage by the exports is 6 for EU markets, less than 3 for European markets outside the EU and less than 5 for non-European markets. The firms engage in different forms of internationalization – mostly exports, but also the cooperation with foreign partners, preferably non-equity forms, and their own activity abroad by sale or production subsidiaries. The above data (and other research results not presented here) support the adopted presumption about the early stages of the international commitment of the firms subjected to the internationalization degree measurement.

3.3. Construction of the internationalization index (INT)

The construction of the measurement instrument was based on the answers to five questionnaire questions concerning: outward and inward forms of internationalization implemented by a firm and the number of foreign markets, share of exports and imports in total sales value, and the international business experience assessed by the number of years of the firm's international commitment. Each of the questions was intertwined with a question concerning the distance of the markets with which the firm's international activity is connected. The empirical material delivered by the survey allowed, in the first place, to define the

basic forms of internationalization and the intensity and extent of those phenomena in the surveyed sample. This was then reflected in detailed descriptive statistics showing the mean values and frequencies of the research variables in the entire sample as well as in its division by sector, industry, company size, ownership, origin of capital and affiliation with capital groups.

The next step of the analyses was using the conceptual and methodological assumptions concerning the construction of composite index of firm's internationalization to propose one and then calculate its value for the individual firms. It was assumed that the proposed internationalization index INT should be composed of the following indicators:

- *Outward Internationalization Forms and Markets* – OIFM;
- *Inward Internationalization Forms and Markets* – IIFM;
- *Export Share in Sales and Markets* – EXSM;
- *Import Share in Sales and Markets* – IMSM;
- *Firm International Experience and Markets* – FIEM.

A premise for the construction of the indicators was that the internationalization degree of a firm increases together with the evolution towards more advanced forms of firm's commitment in foreign markets: beginning from international exchange forms (weight 1), through intermediate forms of internationalization based on contractual and capital cooperation (weight 2), to own activity abroad, i.e. foreign subsidiaries (weight 3), separately for outward and inward internationalization (OIFM and IIFM). Because the degree of internationalization is also dependent on the share of foreign operations, i.e. export and import in total operations, another component of the index was export/import share in total sale (EXSM, IMSM). At the end, the firm's experience in international markets (FIEM), measured by number of years of presence in international markets, was included into the internationalization index concept. Assuming that the firm's internationalization degree increases together with the geographical and psychic distance of the foreign markets an adjustment to the market distance was made. It was presumed that for firms of Polish origin the closest markets in this respect are the European Union ones (weight 1), then – other European markets outside the EU with Russia (weight 3), and finally – the non-European markets (weight 6). After calculating the indicators, their values were normalized to take the final value between 0 and 1. The descriptive statistics concerning the OIFM, IIFM, EXSM, IMSM and FIEM indicators are presented in the Table 1.

Table 1. Descriptive statistics and correlations between internationalization indicators (N = 274)

	Mean	Standard deviation	OIFM	IIFM	EXSM	IMSM	FIEM
OIFM	0.029	0.101	1.00				
IIFM	0.022	0.073	.487	1.00			
EXSM	0.232	0.212	.329	.278	1.00		
IMSM	0.246	0.241	.179	.286	.347	1.00	
FIEM	0.091	0.138	.324	.229	.534	.293	1.00

Legend:

- OIFM – Outward Internationalization Forms and Markets.
- IIFM – Inward Internationalization Forms and Markets.
- EXSM – Export Share in Sales and Markets.
- IMSM – Import Share in Sales and Markets.
- FIEM – Firm International Experience and Markets.

The next step of the study was examining the degree of correlation between these partial indicators intended to compose the internationalization index INT. The correlation was calculated by the Pearson correlation coefficient (r) and all results were statistically significant with $p < 0.001$. The data presented in Table 1 show that there is a positive, moderate correlation between the internationalization indicators, in particular between the firm's international experience FIEM and share of exports in sales EXSM (0.534) and between the firm's outward forms of internationalization OIFM and inward forms of internationalization IIFM (0.487), stronger than between exports EXSM and imports IMSM themselves (0.347). While the weakest correlation show indicators of firm's outward forms of internationalization OIFM and the import share in sales IMSM (0.179). The occurrence of the correlations between all pairs of internationalization indicators showed that they could be good enough to compose the index of internationalization, since they tend to measure the same phenomenon from different perspective (Sullivan, 1994, pp. 332-333).

For the final calculation of the internationalization index INT, a decision concerning the weights given to the five indicators had to be made on the assumption that they should sum up to 1. The chosen weights were as follows: OIFM – weight 0.3, IIFM – weight 0.15, EXSM – weight 0.3; IMSM – 0.15, and FIEM – weight of 0.1. Determining the weights of the internationalization indicators was driven by the theoretical and methodological assumptions presented in this paper and the general aim of the study. It was presumed that the firms' performance assessed in terms of their efficiency and innovativeness should be affected by both the inward and the outward internationalization and the latter would be more significant (in this study – twofold). The assumption concerned

both the forms of firms' international commitment and the share of imports and exports in sale. The firm's experience in international market was taken as a moderating factor with the lowest weight. It was based on a premise that the flow of time may increase the intensity and extensity of internationalization, deepen international cooperation and stimulate international knowledge transfer, i.e. influence the degree of firm's internationalization.

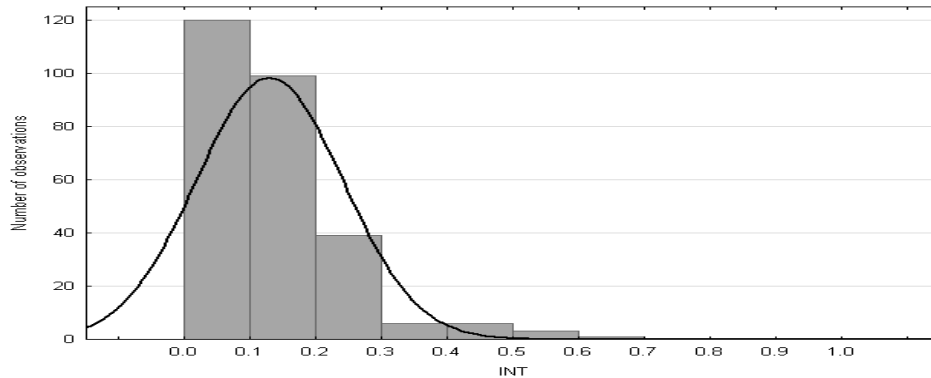
On the above-mentioned assumptions, the internationalization index INT was calculated for the survey sample. To test the reliability of the internationalization index INT alpha Cronbach coefficient was calculated and its value was 0.65. The alpha Cronbach value demonstrates the proper selection of variables to the construction of the INT index, and a relatively high reliability of the index. What is worth mentioning, it is not much lower than the reliability of *degree of internationalization scale index* DOI developed by Sullivan, with Cronbach alpha value of 0.79 (Sullivan, 1994, p. 333).

The implementation of the internationalization index INT to measure the degree of internationalization of the surveyed firms showed that it was low. The mean value for the entire sample was 0.128, with the standard deviation equal to 0.111 and the range 0.644. The basic descriptive statistics of internationalization index INT are presented in the Table 2.

Table 2. Descriptive statistics of the internationalization index INT (N = 274)

	Mean	Median	Range	Standard deviation
INT	0.128	0.118	0.644	0.111

The distribution of the internationalization index INT in the population of firms was examined next. The analysis showed the right asymmetry, which means that most of the surveyed firms were characterized by a relatively low degree of internationalization as illustrated in the histogram (Figure 1). The results may confirm the assumption of the study that the firms are still at an early stage of the internationalization process.

Figure 1. Distribution of the internationalization index INT (N = 274)

Discussion and limitations

The index propounded in the study has been designed to include various forms of firms' inward and outward internationalization – international exchange, the relational forms of internationalization (contractual and capital cooperation) and FDI as well as the specificity of the markets where Polish firms are operating. The designed index may have some of the imperfections mentioned by Dörrenbächer in the context of composite indices but still it seems to be better suited to measure the degree of internationalization of Polish firms than the popular indices developed for transnational corporations (e.g. TNI, GSI), assuming a strong capital involvement and employment abroad and a global spread of markets and countries in which the TNCs are present. It may also have a wider application than the most commonly used individual indicators applied in the researches carried out in Poland so far. Its disadvantage and an advantage at the same time is also the fact that it was built for a broader scope of research than just measuring the degree of internationalization in order to develop a ranking of the surveyed firms. This means that its final usefulness will be determined by the possibility to find out the relationships between internationalization, networking and innovativeness or firms' efficiency, which was the main objective of the research project of which this study is a part.

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