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Empirical Paper

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Intangible assets in the process of internationalization

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Abstract: The aim of this article is to determine the current state of impact of various forms of intangible assets on the internationalization process. For the purpose of the paper meta-analysis was adopted as a method of the study. English-language peer-reviewed journal articles were analyzed only with the help of: EBSCOhost, ScienceDirect, Emerald, JSTOR, ProQuest and Wiley Online databases. The search was aimed at newest papers (after 2012), however some older articles (with regard to their value) were included in the analysis as well. Based on the conducted analysis, there was observed a significant and positive link between the level of employee education and internationalization probability and extent. The effect of the wages on internationalization is stage dependent. Under certain assumptions there is a positive and strong relationship between R&D intensity and internationalization. Advertising spending do not foster the process of internationalization. The practical contribution of this research is twofold. First, it provides valuable insight for practitioners which intangible assets and how foster various modes of the internationalization process. Second, it describes upon which conditions the interrelation between firm intangible assets and internationalization is significant and positive.

Keywords: intangibles, intellectual capital, internationalization, literature review

JEL Classification: F14, O34

1 Introduction

Internationalization is a process of increasing international operations [Welch and Loustarinen, 1988]. It is considered as an expansion of firm through involvement of international operations, especially crossing the nations' domestic borders [Kutschker and Baurle, 1997]. In the contemporary business environment, internationalization is one of the firms' strategic choices. With the emerge of digital era, new resources (e.g., intangible assets) are perceived as significant factors in shaping the process of internationalization. According to Marr and Moustaghfir [2005], any valuable intangible resource gained through experience and learning that can be used in the production of further wealth composes a company's intellectual capital. Kujansivu and Lönnqvist [2007] believe that intellectual capital represents all of a company's nonphysical sources of value. According to Hall [1993], an intangible asset includes intellectual property rights in the form of patents, trademarks, copyright, contracts, trade secrets, public knowledge such as scientific works, networks, organizational culture, and reputation of products and company itself. According to Ghamari et al. [2012], patents, copyrights, trademark, and customer relationship are important determinants of internationalization. Similarly brand value is one of the most important intangible resources of the firm and performs an important relationship with internationalization [Mahnke and Venzin, 2003]. Early studies provide inconclusive results. For example, the study by Denekamp [1995] found that human capital

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(measured as share of lawyers in total employment) and structural capital (operationalized as R&D staff to total employment) are strong predictors of US outbound FDI during the 1980s, whereas study by Kotha et al. [2001] on US Internet firms indicates lack of significant effects of R&D intensity (measured as both R&D expenditures and R&D expenditures to total assets) on internationalization. However, due to the rapid global development, the above mentioned results may not be relevant any longer. As a result, the aim of this paper is to review up-to-date empirical research referring to the link between various forms of intangible assets and internationalization. Consequently, this proposed literature review is focused on the newest research and it relates to the papers not older than 15 years. Additionally, 60% of the analyzed studies were published after 2015.

This study contributes in two ways. First, it enables regulators and managers to focus on those intangible assets items that are effective in terms of fostering the process of internationalization. Second, it attempts to revive and foster the discussion of the relevance of intellectual capital items by the entities especially in the context of its influence of likelihood, forms, and pace of internationalization. For the purpose of this paper, the terms such as intangible assets and intellectual capital will be used interchangeably. The research question formulated is as follows:

RQ. What does the discipline know about the intangible assets determining the internationalization process of firms?

The structure of this paper is as follows. Section 1 is an introduction. In Section 2, the theoretical link between intangible assets and internationalization is examined. Section 3 depicts the methodical assumptions adopted in this literature review. In Section 4, the main findings of existing empirical research concerning the studied impact are presented. In Section 5, the obtained results are concluded along with limitations of the study and future lines of research.

2 Theoretical link between intangible assets and internationalization

Theories of the firm internationalization: Uppsala model [Johanson and Wiedersheim-Paul, 1975], product's cycle life theory [Vernon, 1966], network theory [Johanson and Mattson, 1988], born global and/or international new ventures (INVs) [Oviatt and McDougall, 1994; Knight and Cavusgil, 1996] provide a comprehensive picture of companies' foreign activity and directly or indirectly stress the role of resources which given firm possess, including tangible and intangible assets.

It seems undoubtful that enterprises in order to be successful must possess and leverage information-based intangible resources, including institutional knowledge such as knowledge of laws and regulations [Eriksson et al., 1997]; knowledge of local conditions and opportunities [Chetty and Blankenburg Holm, 2000]; business knowledge of resources, capabilities, and market behavior of suppliers, competitors, and customers [Blomstermo et al., 2004]; and local relationships that provide "home court" advantages to local firms [Dunning, 2001]. Resource-based view theory states that firms enjoy sustained competitive advantage if they hold resources that are valuable, rare, and difficult to imitate or substitute [Dierickx and Cool, 1989; Barney, 1991]. Intangible resources, such as trademarks, brands, customer lists, patents, and also knowledge and skills, are particularly likely to meet these criteria and thus play a central role in explaining firms' sustained competitive advantage on both the domestic and foreign markets.

The most important classification of intangible assets distinguishes among human, structural, and relational assets [Edvinsson and Malone, 1997]. Human assets are usually measured as the level of knowledge, education, or experience in possession of the employees. Formal education represents an investment in human capital and it enhances entrepreneurs' knowledge, problem-solving ability, discipline, and the capacity to introduce practices within the firm that may enhance business success. Completion of higher education in management studies increases business horizons and enhances

the ability of identifying and pursuing foreign business opportunities. In addition, employees in firms performing an internationalization strategy of rapid acceleration need a higher level of technical knowledge and skills which would allow the firm to simultaneously conduct business across markets around the world [Love and Roper, 2015]. Hence, the theory suggests that entering new markets requires unique knowledge and skills, thus the general higher level of human capital should work as an enhancer of internationalization.

Structural assets are commonly attributed to the intangible assets that enable and foster organization in its innovative endeavors. There is a strong premise that product, process, management, and marketing innovations might drive exports at firm level [Cassiman and Golovko, 2011; Becker and Egger, 2013]. Apart from *Oslo Manual* typology of innovations, R&D and patent applications/granted are also commonly perceived as the indicators of firms' innovation activity. Their advantages and disadvantages are well known [Mohnen and Hall, 2013], nevertheless common belief suggests that innovations lead to unique skills, knowledge, attractive products, and consequently competitive advantage that enables firms' internationalization.

With regard to relational assets, the network theory indicates that firms enter those markets where they have established contacts with other firms; therefore, mutual benefits arise from highly internationalized relational capital [Johanson and Vahlne, 2006]. The possible forms of relational assets are brands, customer relations, reputation, and business cooperation.

As suggested by Mohr and Batsakis [2014], there are two mechanisms through which firms' intangible assets increase the firms' internationalization pace. Intangible assets either push firms toward rapid internationalization and/or facilitate already undertaken firms' rapid internationalization. In this sense, scientific interest is put on the four variables: likelihood, speed, forms, and extent of internationalization. In terms of capturing the extent of internationalization, there have been many approaches created. Rugman and Oh [2011] concluded that scale metrics, such as export intensity and foreign sales over total sales, constitute the best choices.

3 Literature review design

The purpose of this proposed review is to present a possibly comprehensive overview of the existing research on the interrelation between intangibles and internationalization. Meta-analysis was adopted as a method of investigation for this study. Meta-analysis is an advanced technique utilized to merge the results of a number of studies in order to provide a better overall picture of the underlying relationships between the studied variables in terms of particular field of interest [Quazi and Richardson, 2012]. The review comprises English-language peer-reviewed journal articles only. Following databases were used to gather needed journals: EBSCOhost, ScienceDirect, Emerald, JSTOR, ProQuest, and Wiley Online. The search was aimed at specific publication period (after 2012); however, some older papers (with regard to their value) were introduced to the analysis as well. A systematic search process in the mentioned electronic databases was performed. The initial set of keywords ("intangible assets," "intangibles," "intellectual capital," "structural assets/capital," "relational assets/capital," "human assets/capital," "internationalization," "entry mode," "foreign markets," "foreign expansion") was formed by general readings, common belief, and the author's experience concerning the possible link between intangible assets and internationalization. Figure 1 presents literature review adopted in this paper.

Figure 1 depicts general design of this proposed literature review. The impact of the intangible assets on internationalization was divided into the influence of intellectual capital three dimensions: human, structural, and relational assets. To conduct the analysis of the empirical studies, each intangible assets dimension was assigned given set of items along with possible measures (operationalization). Guthrie and Petty (2000) intellectual capital disclosure framework was utilized to identify given intangible items within the intellectual capital categories. With regard to the internationalization, the possible impact was analyzed in terms of probability to export, intensity, form, and pace.

4 Findings

For the purpose of this paper, the proposed review is divided into the analysis of structural, human, and relational assets' influence on the internationalization process. Descriptive statistics of the studied papers is shown in Table 1.

The methodology adopted in the analyzed papers referred mainly to the regression models (16 papers). Four studies adopted a multiple case study method. Most quantitative analyses included control variables and some studies performed robustness test. Only two papers took into account lag time of variables effect and it was 1 year. Studied sample varied significantly, from 52 to 5,800 firms (excluding case studies) originating mostly from the developed nations (USA, Western Europe, and Japan). Eight articles analyzed the impact of intangible assets on internationalization in the context of explicitly developing countries (India, Russia, Argentina, Chile, and Visegrad group countries). Out of all the studied sectors, the most prevailing one was manufacturing. Most research employed dynamic approach, and the average time extent of the analysis was almost 5 years; however, only one study may be truly described as longitudinal one (Table 2).

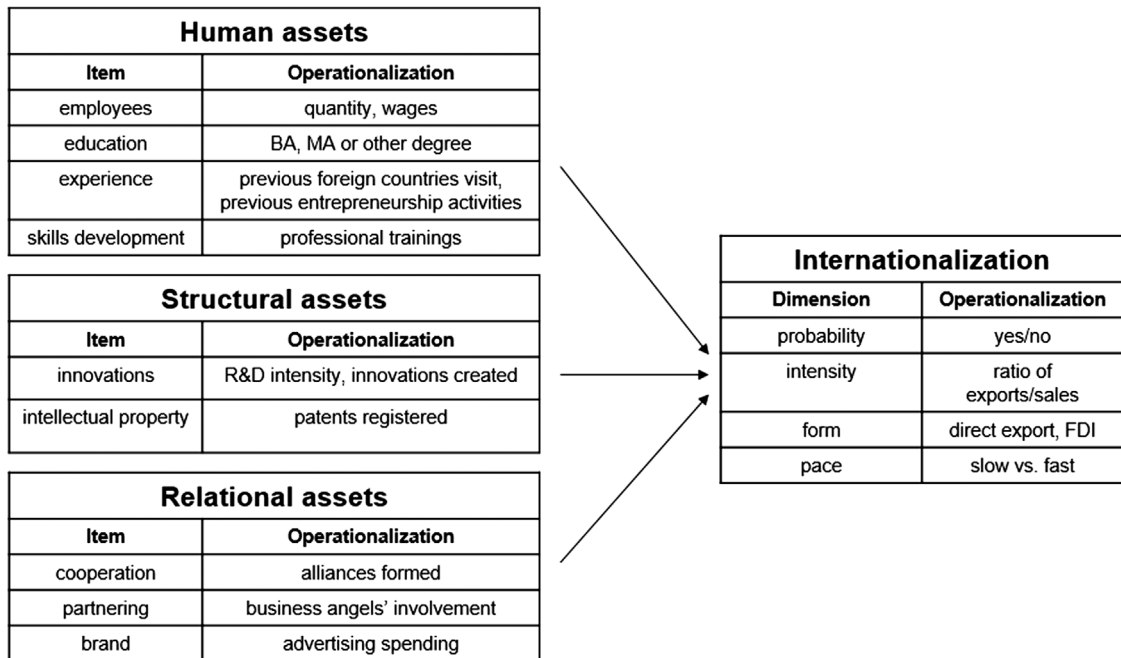


Figure 1. Forms of intangible assets and internationalization—literature review design.

Source: Own work.

Table 1. Descriptive statistics of the studied papers

No. of papers	20
Publishing years of studied papers	2006–2018
Time span of the empirical studies	1985–2017
Average length of empirical studies	4.6
National context	60% developed, 40% developing nations
Methods adopted	Regression analysis: 80%, case studies: 20%
Sample—industry	Manufacturing as dominant industry

Source: Own elaboration.

Table 2. Intangibles and internationalization—summary of literature review (oldest to newest)

Intangible assets component*	Study	Research design**	Sample		Empirical approach			Findings	
			Size/national context	Industry	Years of analysis	Intangible assets proxy	Form of internationalization		Method of data analysis
Human and relational	Hitt et al. (2006)	To study the influence of human and relational capital on internationalization	52 largest U.S. law firms by total revenue	Law firms	1992–1999	Human and relational capital	Number of foreign offices and the number of lawyers in each office	LSDV model involving a generalized least squares estimation, 1 year time lag between variables	The extent of human and relational capital generally had a positive effect on internationalization.
Structural	Filatovchev and Plesse (2009)	Interrelationship between post-flotation R&D efforts and internationalization	1 110 IPO's from UK, Germany, Italy and France	Various, excluding financial sector	1985–2004	R&D intensity	Export growth	Regression analysis, control variables included	R&D intensity positively influences internationalization.
Intellectual	Li et al. (2012)	Role of R&D, advertising, international experience, and alliance in the early internationalization	278 US STEs	Biotech products, computer products (peripherals and components), electronics, semiconductors, software, telecommunications, test and measurement equipment, transportation equipment	2004–2009	R&D intensity, advertising intensity, international experience, forming alliances	Early internationalization understood as establishing foreign operations within 3 years or less of their founding	Regression analysis, control variables included	Early internationalization is positively influenced by R&D intensity, whereas advertising intensity and alliance formed are not significant. Relation between international experience and degree of internationalization takes an inverted U-shape.
Human	Brambilla et al. (2012)	To study how exports and export destinations affect the utilization of skilled labor	901 Argentinian firms	Manufacturing	1998–2000	Wage levels	Export intensity with the division on destinations based on income	OLS, control variables included, robustness test checked	Exporting to high-income countries induces firms to hire more skilled workers, but exporting per se does not.
Structural	Altomonte et al. (2013)	To identify correlation between innovation intensity and internationalization	14,759 large firms from Austria, France, Germany, Hungary, Italy, Spain, and UK	Manufacturing	2008	R&D financial incentives, R&D-related tax allowance	Exports, imports, FDI, outsourcing	OLS, control variables included, robustness test checked	Unit increase in innovation intensity leads to an average increase of around 0.3 in internationalization intensity. No significant cross-country differences are observed.

(Continued)

Table 2. Continued.

Intangible assets component*	Study	Research design**	Sample		Empirical approach			Findings
			Size/national context	Industry	Years of analysis	Intangible assets proxy	Form of internationalization	Method of data analysis
Human and structural	Teixeira and Coimbra (2014)	To study the impact of structural and human capital on the internationalization speed of USOs	111 Portuguese USOs	Energy/environment/ sustainability, bio/ pharma, medical devices/diagnostics, microelectronics/ robotics sectors, ICT/software/digital media, agri-food	2012	Experience, education, R&D intensity, no. of patents registered	Time lag between the founding of the firm and the firm's first international operations	OLS, control variables included
Human and structural	Mohr and Batsakis (2014)	Impact of intangible fixed assets and international experience on internationalization speed	144 global firms (majority from USA, UK, Japan, Germany, France)	Retail	2003–2012	Intangible fixed assets, depth and breadth of international experience	Speed of internationalization (average number of foreign outlets divided by the number of years since the firm's first international expansion)	Generalized least squares (FGLS), control variables included
Intellectual	Moisés et al. (2014)	To determine the role of intangible assets in born globals and Uppsala models firms	3,690 firms from 80 countries	Various	1999–2000	Tobin's <i>q</i>	Export intensity	Tobit regression, control variables included
Human	Lafuente et al. (2015)	Impact of intangible assets on likelihood of export entry and export sustainability	319 Romanian SMEs	No information	2008	Managerial studies, labor experience, presence of an entrepreneurial team, perceived risk	Probability of export entry and export sustainability	Multinomial logit regression, control variables included, robustness test checked
Human and structural	Rodríguez and Nieto (2015)	Impact of innovation capability and cooperation on the propensity to internationalize	1,839 Spanish firms	Knowledge-intensive business services (NACE M72, M73, M74)	2003–2005	R&D intensity, training expenses, R&D personnel	Export intensity	Probit model, control variables included

(Continued)

Table 2. Continued.

Intangible assets component*	Study	Research design**	Sample			Empirical approach			Findings
			Size/national context	Industry	Years of analysis	Intangible assets proxy	Form of internationalization	Method of data analysis	
Human	Bell and Cooper (2015)	To study the role of intangible assets in the internationalization	9 Canadian SMEs	Pharmaceuticals	No information	Entrepreneur background, knowledge, networking activities	Number of countries internationalised	Multiple case study	Most studied companies evaluated entrepreneur background, knowledge on foreign markets, and networking activities as vital factor of internationalization.
	Panda and Reddy (2016)	Impact of human capital, advertising, and brand investments on internationalization	46 public and private Indian banks	Banks	2008–2012	Number of employees, advertising, and brand investments	International advances and borrowing intensity number of countries served	Pooled OLS, control variables included	Intellectual capital has a significant positive influence on the internationalization of banks in terms of international advances intensity and number of countries served. Advertisement and branding expenses are significantly negatively related to the international borrowing intensity.
Human	Onkelinx et al. (2016)	The role of firm-level human capital in the internationalization of SMEs	5,800 Belgian SMEs	Manufacturing	1998–2005	Weighted average education level of newly hired employees and the average wage level of all employees	Export intensity	Hierarchical Tobit regression, control variables included analysis 1 year time lag	Findings indicate a significant curvilinear (inverted U) association between the level of human capital and the firm's export intensity when firms choose a strategy of accelerated internationalization.
Human	Almodóvar et al. (2016)	The role of human asset quality in the internationalization of SMFES	610 Spanish SMFES	Manufacturing	2006–2010	Weighted average education level, R&D staff ratio	Export intensity	Tobit panel data analyses, control variables included	Relation between education level of the employee base, ratio of R&D staff to total employees, and internationalization take an idiosyncratic S-curved shape.

(Continued)

Table 2. Continued.

Intangible assets component*	Study	Research design**	Sample		Empirical approach			Findings	
			Size/national context	Industry	Years of analysis	Intangible assets proxy	Form of internationalization		Method of data analysis
Intellectual	Danik et al. (2016)	To study motives of early internationalization	10 Polish SMEs	Various, nonfinancial	No information	Founders background, knowledge, personal relations network, experience	Funding born global and early internationalization process	Multiple case study, descriptive statistics	International “vision,” previous experience, and strategy of the management are very important in funding a born global firm and later internationalization process.
Human	Arte (2017)	To examine the role of experience and knowledge in new venture internationalization	6 Indian SMEs	Various, nonfinancial	2015	Experience, market and technological knowledge	INVs	Multiple case study	International, entrepreneurial, and industry experience are perceived as the important factors in the process of internationalization along with the market and technological knowledge.
Intellectual	Jardon and Molodchik (2017)	To explore the role of intellectual capital in each phase of the process of internationalization	1,687 Russian firms	Manufacturing	2013–2014	Education, internal coordination system, cooperation (various forms)	Six staged internationalization index (within the framework of the Uppsala model)	Logistic regression, control variables included	Cooperation (in its various forms) is the most important determinant of internationalization at all stages, followed by structural capital.
Structural	Cieřlik and Michatek (2018)	To determine the relationship between different forms of innovation and their export performance	1,374 firms from Poland, Czech Republic, Hungary, Slovakia	No information	2011–2014	Process, product, management and marketing innovation, R&D spending	Probability of export initiation	Probit model, control variables included	Only process innovations, R&D spending, and employees with higher education positively affect export likelihood.

(Continued)

Table 2. Continued.

Intangible assets component*	Study	Research design**	Sample		Empirical approach			Findings
			Size/national context	Industry	Years of analysis	Intangible assets proxy	Form of internationalization	Method of data analysis
Human and relational	Baier-Fuentes et al. (2018)	Impact of human and relational capital on rapid internationalization	3,425 entrepreneurs from Spain and Chile	No information	2013	Entrepreneurs' formal education, entrepreneurial experience, risk perception, entrepreneurs' network, entrepreneurial team, business angels' involvement	Rapid internationalization understood as INVs	Regression analysis, control variables included
								Positive influence of formal education. No link between entrepreneurial experience/ risk perception, and rapid internationalization (Spain). In the case of Chile, all three human capital measures positively influence rapid internationalization. Positive influence of entrepreneurs' networks, teams, and participation as a business angel (Spanish context only).
Intellectual	Éltető and Udvari (2018)	To determine the factors enhancing internationalization	148 Hungarian SMEs	No information	2016–2017	Commitment of the own management, knowledge on the market, language skills, technological development	Export intensity	Descriptive statistics, case study
								Commitment of the own management, knowledge on the market, language skills, and technological development were the most important intangible factors contributing to the successful internationalization.

*When intellectual assets indicated, study encompassed all forms of intangible assets: human, relational, and structural.

**Research design limited to the link between intangible assets and internationalization. Thus original research design may vary from the one presented in this paper.

Source: Own elaboration.

INV, international new ventures; LSDV, least squares dummy variable; OLS, ordinary least squares; SMEs, small technology-based enterprises; USO, university spin-offs.

4.1 Structural assets

Vast majority of studies on the influence of structural assets on internationalization employs R&D intensity in modeling the potential impact. Teixeira and Coimbra [2014] studied how R&D intensity and patents registered influence the speed of internationalization on the sample of Portuguese university spin-offs (USOs) from different manufacturing firms. Study revealed that high R&D-intensive USOs perform low pace of internationalization, what stays strongly in contradiction to the theory of born globals/INVs. Possible explanation is the structure of R&D financing in the case of USOs, as these entities tend to spend many years on publicly financed/subsidized R&D activities before they decide to enter the market with their products [Pettersen and Tobiassen, 2012]. Long technology development and commercialization cycle leads to slow pace of internationalization and combining with the low sales levels leads to high R&D intensity ratios, thus providing bias results. Moreover, the authors found no link between number of registered patents and internationalization speed. However, Filatotchev and Piesse [2009], using a longitudinal, multi-industry, and multi-country data set (four European nations: UK, France, Germany, and Italy) found that the level of accumulated intangible assets fosters the R&D intensity (measured by the R&D expenditures as a percentage of sales) which in turn positively influences export intensity (international sales/total sales). Study was conducted on the sample of newly listed firms and the link was analyzed with regard to post-flotation R&D expenses. In this sense, findings support a capability-based view of internationalization [Autio et al., 2000; Sapienza et al., 2006], which indicates that internationalization decisions of newly listed firms (aimed at expanding their growth potential) are driven, *ceteris paribus*, by their ability to invest in knowledge development and innovation. The authors also found that R&D and export orientation have a combined effect on firms' growth on the basis of mutually enforcing phenomenon. Similarly Li et al. [2012] on the sample of US small technology-based enterprises (STEs) found a significantly positive linear impact of R&D expenditures on the early internationalization of STEs. Same conclusions were driven by Rodríguez and Nieto [2015] who found that R&D expenditures are positively linked with export intensity (export revenue/total sales) of Spanish knowledge-intensive business services firms. Operationalizing R&D intensity as R&D spending/sales ratio and expanding the model by innovation output (as forms of innovation according to *Oslo Manual*) were conducted by Cieřlik and Michałek [2018] who on the sample of Visegrad countries stated that not only R&D spending positively affects the probability of exporting but it also affects the emergence of process innovations. However, what is interesting, product, management, and marketing innovations appeared not to be significant in terms of export likelihood in the studied sample. Valuable approach was performed by Altomonte et al. [2013] who using a large sample of firms from developed Europe countries studied how R&D financial incentives and R&D-related tax allowances impact the probability to export. The authors found that innovative firms (ones that benefited from R&D incentives and/or R&D tax allowances) are more probable to internationalize, although in a non-monotonic manner (the effect of innovation tends to decrease once the firm is already involved in three or more foreign activities). Moreover, internationalization intensity is dependent upon the level of innovation intensity, which is the greatest around the median quintile (0.33) of innovation intensity.

Study referring to the more general technology capture was conducted by ltet and Udvari [2018] on the sample of Hungarian SMEs. Based on the questionnaires, the authors found that technological development is an important facilitator in the process of internationalization. Similarly, Danik et al. [2016] stated that innovativeness is one of the most important reasons for setting up the born global firm.

Concerning other forms of structural capital, the resource-based view considers brand image as a significant intangible asset which leads to competitive advantage of the firm [Wernerfelt, 1984]. In this view, firms should invest in promotion and brand recognition of customers. Li et al. [2012] studied the role of advertising spending in the process of early internationalization on the sample of US STEs. However, the authors did not find significant correlation. The study by Panda and Reddy [2016] on the sample of Indian banks revealed as well that advertisement and branding expenses were negatively correlated with all the measures of internationalization (in this particular case, due to industry-specific features operationalized

as international advances intensity, international borrowing intensity, and number of countries served). It should be then understood that the less banks spend on branding and advertisement the greater their level of internationalization.

4.2 Human assets

Panda and Reddy [2016] studied the impact of human capital (measured as the number of employees) on the internationalization (operationalized as international advances intensity, international borrowing intensity, and number of countries served) of Indian public and private banks. The authors found that human capital positively impacts the international advances intensity and number of countries served. However, due to the studied industry-specific features (banks as knowledge-intensive services) this result should be treated with cautious, as intellectual capital was simply operationalized as the number of employees. However, as suggested by Sveiby [1997] and Stewart [1999] not all employees possess knowledge and skills of equal strategic importance for the firm and thus they should not be classified as human capital. Cieřlik and Michařek [2018] found that the share of tertiary education graduates in productive employment is positively related to the probability of exporting. In terms of export intensity, Ęltetř and Udvari [2018] on the sample of Hungarian SMEs found that language skills enhance successful internationalization. Using the sample of Spanish SMFEs, Almodřvar et al. [2016] investigated how R&D Staff ratio and weighted average education level impacts the internationalization (export intensity). The authors found that there is a S-curve association that implies that in the case of employee education a positive effect is generally observed on internationalization with the negative influence in the second stage that may be explained by the temporary effect of the liability of outsidership, when time and efforts are needed for adaptation. Moreover, with regard to the S-curve association between R&D Staff and internationalization it was observed that low and high human asset quality levels foster, while medium hinders the process of internationalization. This phenomenon may be explained in a way that having more R&D Staff is not effective due to limited management capabilities especially in smaller, entrepreneurial companies (SMFEs) and thus trade-off must occur between monitoring employees working on innovations versus active in international market.

The role of human capital in the process of internationalization was also studied by Onkelinx et al. [2016] on the sample of Belgian manufacturing SMEs. The authors analyzed the impact of education and wage levels of the employees on two possible paths of internationalization: accelerated (associated with born globals) and gradual (typical for Uppsala model). It turned out that only in the case of rapid internationalization investments in human capital positively influence export intensity. However, the positive impact is observed up to a point, after which additional investments are negatively associated with internationalization, thus the findings suggest a curvilinear (inverted U) association between the level of human capital and the firm's export intensity. As stated earlier, in the case of gradual path of internationalization, a significant association between the accumulation of employee human capital and internationalization was not observed which can be explained in a way that gradual internationalization enables firms to gather knowledge learn from their past experiences and utilize it during the next market entered. In this sense, gradual internationalizers do not pursue a strategy of hiring highly educated, experienced, and productive employees. They rather tend to maintain their level of human capital.

Brambilla et al. [2012] on the sample of Argentinian manufacturing firms indicated that companies trading with high-income countries hired greater numbers of skilled workers and paid them higher average salaries than other exporters (to non-high-income countries) and domestic firms.

Baier-Fuentes et al. [2018] studied the role of university or postgraduate education, entrepreneurial experience, and risk perception in the process of rapid internationalization among the Spanish and Chilean entrepreneurs. The authors found that in both contexts, entrepreneurs who have obtained a university or postgraduate education are more likely to rapidly internationalize their companies (similar to previous studies). Concerning the impact of entrepreneurial experience, the results were significant neither for Spain nor for Chile. In terms of risk perception, only the Chilean entrepreneurs provide evidence on the link between less fear of failure and rapid international activity. No such relation was

observed for Spanish entrepreneurs. Arte [2017] analyzed the role of international, entrepreneurial, and industry experience in the process of internationalization. With the help of direct interviews with Indian firms, the author showed that international experience (measured as entrepreneurs living in foreign countries) was found to be an important factor for most firms in taking the decision to internationalize. International experience provided entrepreneurs with practical market knowledge and helped them in identifying key business opportunities. In turn, industry experience appeared to be significant for most of the studied firms. The author also observed that market and technological knowledge are key drivers of new ventures internationalization what is in line with the learning perspective of internationalization [Barkema and Vermeulen, 1998]. The role of firm founders' previous experience was confirmed as important enhancer of establishing a born global firm by the study of Danik et al. [2016] on the sample of Polish companies.

Lafuente et al. [2015] studied how managerial studies, labor experience, presence of an entrepreneurial team perceived risk influence probability of export entry and export sustainability. Based on the sample of Romanian SMEs, the authors stated that likelihood of export entry is only statistically significant by completion of management studies and existence of entrepreneurial team, whereas probability of export sustainability is influenced only by labor experience. Perceived risk appeared not to be statistically important neither in the case of export entry nor in export sustainability. In contrary, Teixeira and Coimbra [2014] stated that the founders' entrepreneur's education (technology-related skills) affect positively and significantly the pace of internationalization (measured as the time lag between the founding of the firm and the firm's first international operations). The authors concluded that there is no relation between experience of the founding team and speed of internationalization. However, Li et al. [2012] indicated that the impact of international experience has inverted U-shaped relationship with early internationalization which suggests that small and inexperienced STEs tend to internationalize earlier than their relatively larger and more experienced counterparts. In this sense, the authors argued that in contrary to general belief, larger companies do not internationalize more intensively than the small ones and less experienced. Although this finding is interesting, it must be stressed that such phenomenon may apply only to high-tech industries which markets are more dynamic and experience greater risks due to more frequent technological disruptions. In this sense, smaller firms are more flexible and thus more effective in conducting rapid actions in response to market opportunities and threats.

Hitt et al. [2006] on the sample of largest US law firms found that the level of human capital (operationalized by three measures: quality of law school attended by partners, average experience of the partners in a focal firm, and total partner experience in the legal field averaged across the partners in the focal firm) is positively related to the degree of internationalization in the form of FDI. Moreover, the authors stated that corporate client relational capital (measured by number of large corporate clients, international diversity of these clients, and the continuity of the relationships) serves as a base for internationalization when a firm has strong human capital.

4.3 Relational assets

Case studies provided by Bell and Cooper [2015] showed that Canadian SMEs used eagerly relational assets (by utilizing trade and third-party networks in home country), not only to accumulate market and internationalization knowledge but also to (a) shorten the time needed to gain knowledge and experiences and access and deepen market penetration; (b) overcome psychic distance, risk, and limited resource obstacles; (c) influence selection of foreign market, and (d) leapfrog internationalization stages. The significance of knowledge on the foreign market was proved as important enhancer of the export intensity by the study of Éltető and Udvari [2018] on the sample of Hungarian SMEs. Knowledge of foreign markets was proved by Danik et al. [2016] on the sample of Polish SMEs to be a crucial determinant of establishing a born global firm.

Li et al. [2012] investigated if alliances with business partners may foster the process of early internationalization (sample of US STEs). The authors did not find statistical significance. However, Hitt et al. [2006] on the sample of largest US law firms stated that corporate client relational capital (measured

by number of large corporate clients, international diversity of these clients, and the continuity of the relationships) serves as a base for internationalization when a firm has strong human capital. However, second studied type of relational asset (foreign government client relational capital, operationalized as the total yearly compensation received from these governments) appeared to be a strong driver for internationalization. This can be explained in a way that while providing services to foreign governments in firm home country, the company gather knowledge on the (foreign) client's country, culture, and market opportunities abroad. In this way, an information transfer is observed. Moreover, since already existing cooperation with foreign official entity firm's reputation, especially in the home markets of the governments represented, becomes stronger, the market entry becomes theoretically easier [Ellis, 2000]. Rodríguez and Nieto [2015] found that cooperation between studied firms and other companies or institutions is positively linked with export intensity (export revenue/total sales) in the context of Spanish knowledge-intensive business services firms. Similarly, Baier-Fuentes et al. [2018] found that among the Spanish and Chilean companies, entrepreneurs' interpersonal networks, entrepreneurial teams, and business angels' involvement foster the likelihood of rapid internationalization of the firms, however only in the Spanish context. Interesting conclusion was driven by Danik et al. [2016] who observed that in the case of the majority of studied firms the networking activities did not begin immediately right after establishing born global firm, but some years later.

Jardon and Molodchik [2017] studied the impact of intellectual capital components on different stages of internationalization with regard to Uppsala model (stage 1—passive exports, stage 2—exports, stage 3—integrated exports, stage 4—internationalized, stage 5—integrated internationalized, and stage 6—multinationalized) on the sample of Russian firms from different manufacturing industries. In terms of relational capital (operationalized by five different types of cooperation), the study showed a positive influence on all stages of internationalization. These findings stress the importance of cooperation activities in the first line as determinant of internationalization. However, this conclusion may be valid only in the studied context, as Russian firms often have to overcome intercultural barriers existing between Eastern and Western mentalities [Bengoa and Kaufmann, 2015].

4.4 Miscellaneous

Some studies also analyze the role of accounting values of intangible assets and its impact on internationalization. Mohr and Batsakis [2014] found that the ratio of book values of intangible assets to total assets is positively correlated with the speed of internationalization measured as the average number of foreign outlets divided by the number of years since the firm's first international expansion. In addition, the authors also observed that international experience depth (total number of years a firm has operated in each different foreign country) and breadth (total number of foreign countries in which the MNE has established at least one outlet) positively affect internationalization speed as well. Moisés et al. [2014] on the broad sample of firms from 80 countries found that intangible assets (operationalized as Tobin's q) are more important for the internationalization process (share of export in total sales) of the born globals than for the Uppsala firms.

5 Summary

This paper investigates the link between numerous forms of intangible assets possessed by firms and various forms of internationalization from different international backgrounds in the light of empirical studies. Understanding the likelihood and speed of internationalization is particularly important considering that many nations adopt a contemporary economic model, which is export-driven. The review conducted indicates that empirical studies provide inconclusive results; however, there may be general conclusions formed.

First, it seems that R&D activity (operationalized as R&D expenditures, patents registered, and innovation output) provides an inconclusive and ambiguous effect on internationalization. However, under

certain assumptions (situations described earlier), there is a positive and strong relationship between R&D intensity and internationalization. Therefore, the review of the empirical results analyzed in this paper confirms the significance of R&D activity in terms of expanding international activity which is an important consideration for the managers while formulating firm strategy.

Second, contrary to common belief, advertising spending does not foster the process of internationalization. However, this conclusion should be treated with cautious, since only two papers investigated this interrelation. This link should be a matter of further research.

Third, there is a significant positive link between the level of employee education and both probability and extent of internationalization. The effect of the wages on internationalization is stage-dependent.

Fourth, the cooperation activities facilitate the extent of internationalization. This interrelation was proved both in the context of developed and developing nation.

Final conclusions serve as guidelines for managers and business practitioners in terms of optimizing efforts while internationalizing their firms by investing and developing certain firm-specific advantages in the field of intangible assets. Specifically, the conducted review provides direct suggestions which intangible assets lead to greatest positive outcomes with regard to internationalization. As a result, human assets, measured with different indices and/or approaches, are the strongest facilitators of internationalization, among all intangible assets. This conclusion is crucial, because, on the one hand, it is in line with theoretical deliberations, but, on the other hand, helps the managers to perceive expenditures on intellectual capital (e.g., trainings) not as a cost but as an investment. In this sense, this paper encourages business practitioners to shift their interest into intangible resources to a greater extent. The practice-oriented design of this paper was also aimed at fostering the discussion among the scholars on the significance of various intangible assets forms in the process of internationalization.

This paper is based only on the empirical studies included in the articles, which may be understood as a limitation. Another significant limitation could be the lack of empirical studies considering the time lag between intangible assets variables and internationalization. This type of research was rare in the studied sample of articles, presumably due to (almost) lack of longitudinal studies. Future lines of research should be devoted to the deeper analysis of the impact of advertising activities on the internationalization process especially in terms of forms and pace. There is also a great potential for further theory development by conducting the studies with greater international comparisons on the role of intangible assets in the process of internationalization.

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