MODELLING INTERNATIONALIZATION OF HIGH GROWTH FIRMS: MICRO LEVEL APPROACH

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Introduction

High-growth firms (HGFs) make a significant impact on the development of countries' economies and micro, or firm level, factors are vital in understanding this phenomenon. Indeed, HGFs are unique engine of national economies that contribute essentially to economic growth which is much sought after in internationally open economic environment. More specifically, HGFs internationalization is perceived as a source of productivity, export and employment growth in the country. Economic policies of countries, as a macro level stimulus, aim to provide impetus for HGFs development, however understanding micro level factors of HGFs creation, development and internationalization are the basis for macro level decisions. Studying and modelling of micro level factors not only provides an opportunity to understand the phenomenon of HGFs but also develops the basis for policy decisions especially in the field of business internationalization.

The investigations confirm that HGFs represent only 4% of businesses, but create about 50% of jobs and contribute to the high-quality employment (Madelin & Ringrose, 2016). These firms tend to growth internationally early-on in their life and exhibit higher productivity growth (Keen & Etemad, 2012). In contrast, less growing firms are inward-looking 'stable' firms (Hansen & Hamilton, 2011). Thus, the contribution of HGFs to countries' productivity and competitiveness attracted significant attention of policy makers. On the other hand, insufficient entrepreneurship development and international growth of the firms have been observed. These observations have led to a set of policy measures, fostering development of HGFs locally and internationally. The promotion of HGFs was defined as the objective of the EU Strategy Europe 2020. Prevailing policy aims to stimulate internationalization of HGFs through implemented measures, facilitating access to international markets, supporting R&D and establishing international benchmarking (Madelin & Ringrose, 2016).

Small and medium sized enterprises (SMEs), comprising from 95% to 99% of the businesses, are seen as a potential source of HGFs. The EU business support policy encourages "the growth of markets outside the EU" (SME regional policies, 2016). Thus, implementation of public policies shapes environment, favourable for innovations and internationalization of SMEs. Consequently, the development of supporting measures, targeting high-growth SMEs and their internationalization, has led to the appropriate strategies adopted by the EU member states.

A strand of scientific studies adopted macro-level approach and analysed the influence of public policy, like tax policy and financial assistance, facilitating HGFs internationalization or the effects of institutional framework on firm growth (Henrekson & Johansson, 2009; Belás et al., 2015; Daunfeldt, Johansson, & Halvarsson, 2015). Meanwhile, another stream of scientific studies aimed better understand the attributes associated with growth and focused on micro-level factors, like founder characteristics, firm characteristics and business practices (Barringer, Jones, & Neubaum, 2005; Dobbs & Hamilton, 2007; Belás et al., 2014). In particular, they emphasize the role of owners/founders and managers as vital in the development processes of HGFs (Barringer & Jones, 2004; Wennberg, 2013). These studies disclosed that education, prior industry and leadership experience are the most common predictors of firm growth and consequently their internationalization (Wennberg, 2013; Senderovitz et al., 2016). Despite the ongoing debate, the research

focused on leaders in HGFs is scant (Wennberg, 2013; Demir et al., 2016). While a number of studies investigated HGFs in developed countries (Keen & Etemad, 2012; Brown & Mawson, 2015; Senderovitz et al., 2016) the investigations in Eastern European markets' context are less developed (Korsakienė & Tvaronavičienė, 2012; Belás et al., 2014). Thus, the studies on micro-level factors, related to the management characteristics of HGFs, are seen as the area of interest for deeper investigation.

The paper aims to identify and analyse some of the most significant factors, impacting internationalization of the HGFs by investigating the attitudes of owners and professional managers. The research contributes to the extant literature in the following ways. Firstly, a set of micro-level characteristics, facilitating internationalization of HGFs, are investigated. Thus, the investigation responds to the call for a need to study micro-level factors and to explain international dynamics of HGFs (Barringer, Jones, & Neubaum, 2005; Keen & Etemad, 2012). Secondly, the research fills the literature gap and provides valuable findings on HGFs in Eastern European country. The studies disclose that HGF activity has been especially meaningful for economic growth in transition economies (Stam & van Stel, 2011; Belás et al., 2015). Notably, HGFs create new jobs with relatively high incomes and the growth process is facilitated by relatively high levels of human capital. Considering the distinctive features of HGFs, they appear to be very important contributors for real convergence of former communist countries of Eastern Europe after the EU enlargement. Some of these countries are characterized as small and open economies which depend on considerable export flows. For instance, Lithuania is characterized by the resource scarcity, limited internal demand and dependence on the export. Notably, country's business environment has been shaped by national policy and considerable support from the EU regional funds, fostering entrepreneurship and internationalization of the firms, over the last ten years. Thus, international expansion of Lithuanian HGFs develops fruitful venue for the scientific investigations.

The paper is structured as follows. First, the discussion on HGFs internationalisation and some micro-level factors is provided and the hypotheses are developed. The next section defines research sample, research methodology and data composition. The quantitative modelling approach leads to the exploration of the causal interrelationships between selected micro-level factors and HGFs internationalization. The next section presents research findings and discussion. Finally, conclusions and recommendations for the future investigations are suggested.

1. Theoretical Framework and Hypotheses

1.1 The Phenomenon of High Growth Firms

In the last two decades, substantial efforts have been made to understand the phenomenon of high growth. However, the scientific community has not reached the consensus related to the common definition (Shepherd & Wiklund, 2009) and the increasing literature on HGFs provides a number of contradicting approaches. The ongoing debate let us observe that different definitions lead to different factors as subjects of high growth. While some scholars emphasize firms' size, industry, business age and location (Hart, 2012), others stress resources and capabilities as the key characteristics of HGFs (Moreno & Casillas, 2007). The studies distinguish different growth indicators (e.g. employees, revenue, profit, etc.), the measurement value (e.g. absolute, relative and etc.) the period of growth and the type of growth (Mogos, Davis, & Baptista, 2015). Thus, different approaches to the growth lead to the different ways of reasoning.

The official institutions suggested standard characteristics of HGFs, such as employment and turnover indicators (Eurostat-OECD, 2007). In terms of turnover the standard requirement for HGFs is justified: the firm has to maintain greater than 20% turnover rate per annum for three years. Meanwhile, the requirement for employment ignores the firms having less than 10 employees. Thus, the definition neglects the opinion that the micro and small enterprises (especially start-ups) are the largest contributors to economic growth (Li & Rama, 2015).

Assuming prevailing shortages of various approaches and not going deep into debates, the authors of this paper adopt the view that high-growth firms are the firms that are able to grow more rapidly than others in the industry and thus, are substantially different. The adopted approach is in line with other investigations,

focused on HGFs (Moreno & Casillas, 2007). The impact of HGFs on the employment and economic development of countries is undeniable. On the other hand, HGFs comprise small population in the countries' economies and thus, are difficult to study (Keen & Etemad, 2012). Therefore, the phenomenon of HGFs requires deeper understanding and comprehensive investigations.

1.2　High Growth and Internationalization of Small Firms

A number of researches, targeting HGFs, are performed in small firms' context. The scholars suggest that high growth of small firms is triggered by entrepreneurial initiatives, innovativeness and faster commercialization of knowledge (Keen & Etemad, 2012; Kubíčková & Procházková, 2014). Meanwhile, geographical expansion of the firms is seen as one of the most important paths for business growth. The literature recognizes that internationalization contributes to the growth of revenues due to manufacturing efficiencies, economies of scale and scope, access to foreign technological, marketing and management know-how (Manolova, Manev, & Gyoshev, 2010). Finally, internationalization leads to innovative products and services.

The literature focused on small firms' internationalization is vast and comprises different approaches and definitions. Thus, different interpretations of internationalization stemmed from stage, network and resource-based approaches. A stream of investigations refers to gradual and sequential internationalization process that consequently leads to the commitment of the firms to international markets (Welch & Luostarinen, 1988). Meanwhile, a network approach emphasizes the significance of "business relationships in other countries" and distinguishes extension, penetration and integration processes (Johanson & Vahlne, 1990). Finally, the resource based approach emphasizes internationalization as "the process of mobilizing, accumulating, and developing resource stocks for international activities" (Ruzzier, Hisrich, & Antoncic, 2006). Though presented approaches demonstrate the complexity of internationalization phenomenon, the authors of the paper refer to internationalization as the expansion of the firm's operations to foreign markets.

While the ongoing debates surround the issue of fast (or even extraordinary) business growth and internationalization, the different concepts, related to the growing firms, have been emerging in the scientific literature. For instance, international entrepreneurship studies distinguish international new ventures or born-global firms (Knight & Cavusgil, 1996) that derive a significant amount of incomes from international operations. However, following previous studies (Buckley & Ghauri, 1993), we assume that the concepts of growth and internationalization are interrelated and thus, high growth firms generate significant proportion of incomes from international activities. On the other hand, there is a need to investigate why HGFs are tended to internationalize. Thus, next sections will focus on some of the most significant factors, impacting internationalization of the firms.

1.3　International Entrepreneurship and High Growth

The studies, focused on extraordinary growth of the firms, tend to address different issues. Hence, two contradicting streams of studies predominate in scientific literature (Moreno & Casillas, 2007). The first stream emphasizes the impact of firm's size and age on growth. The second stream attempts to address the impact of strategy, organization and characteristics of owners/founders and professional managers. The latter factor attracted considerable attention of scholars in international entrepreneurship literature. It appears that characteristics of owners/founders and professional managers are interrelated with entrepreneurial behaviour and let the firms to overcome the liabilities of newness and smallness. Thus, the international growth of small firms, on the contrary to multinational corporations, depends on accumulated human capital (Manolova, Manev, & Gyoshev, 2010; Wright, Westhead, & Ucbasaran, 2007; Cerraro & Piva, 2012).

Internationalization of HGFs is triggered by the founders' and professional managers' motivation for growth and international orientation. For instance, the investigation of 247 Norwegian SMEs revealed a positive and significant relationship between growth motivation of leaders and firm growth (Moen, Heggeseth, & Lome, 2016). Thus, founders and managers with a strong motivation for growth tend to acquire business capabilities

for growth both domestically and abroad. The comparison of 128 internationalized and non-internationalized small firms in US revealed that founders and managers rely on their international experience, skills and positive environmental perception when internationalizing the firms. The results have led to the conclusion that the environmental perceptions and self-assessed strengths in international business skills distinguish international and domestic firms (Manolova et al., 2002). Notably, Stam and Wennberg's (2009) study of 647 Dutch firms in their first six years of existence disclosed that managers' leadership and industry experience were positively associated with firms' likelihood of exhibiting rapid growth. Meanwhile, other studies concluded that international orientation and risk perception are the main predictors of internationalization (Ruzzier, Hisrich, & Antoncic, 2006).

The above presented arguments, grounded on prevailing studies, let us conclude that owners/founders and professional managers of HGFs play a pivotal role in the high growth and thus, internationalization processes are stimulated by their personal characteristics. Thus, our investigation extends the extant knowledge on owner/manager's personality traits, perceptions of internationalization barriers and incentives and HGFs internationalization. In the next sections, we are going to develop insights based on personality traits theory and investigations on the perceptions of internationalization barriers and incentives in order to develop research hypotheses.

Entrepreneurial Traits
Personality traits, comprising abilities, motives, attitudes and characteristics of temperament are a key for understanding the behaviour of owner/founder and professional manager. According to Brandstätter (2011), personality traits studies genetically co-determined psychological structures, impacting person's experience and actions. Meanwhile, entrepreneurship literature, grounded on the traits theory, assume that in opposite to the rest of population, the entrepreneur who decides to establish a new firm has a different psychological profile (Veciana, 2007).

Though the literature provides a number of personality traits, the investigations in small firm context demonstrate mixed results and thus, are inconsistent. The studies have not differentiated between owners/founders and professional managers for the following traits: high need for achievement (Shane, Locke, & Collins, 2003), risk-taking propensity (Tan, 2001), and locus of control (Shane, Locke, & Collins, 2003). Meanwhile, need for autonomy (Brandstätter, 2011) and innovativeness (Gürol & Atsan, 2006) distinguishes owners and professional managers and thus, demonstrates high correlation with business creation and success. A variety of research instruments were applied to measure a set of entrepreneurial traits. Some studies were triggered by the aim to investigate a field of research for congruence of the results obtained in other studies (Brandstätter, 2011) and revealed a number of traits matched to entrepreneurship (Rauch & Frese, 2007). Personality determinants are interrelated with internationalization of small firms (Acedo & Jones, 2007). Thus, it is reasonable assume that the strength of founder/managers' personality traits stimulate international expansion of HGFs. Based on these arguments, we hypothesize:

H1: There is a positive and significant association between the strength of owner / professional manager's personality traits and HGFs internationalization.

Entrepreneurial Perception of Business Environment
The changes in business environment present opportunities for business extension and unique challenges for the firms. Meanwhile, the subjective attitudinal, structural and operational constraints restrict international expansion of small firms. Thus, attitudinal constraints shape the behaviour of owners/managers by limiting the ability to initiate and expand the business abroad.

The early investigations, provided by Johnston and Czinkota (1985), distinguished the following barriers: marketing activities of competing firms, perception of higher risk in overseas markets, knowledge of the market and how it operates, cost issues, lack of export training. Later on, the characteristics relevant to the industry and the firm were outlined as the obstacles for international activities (Hutchinson, Fleck, & Lloyd-Reason, 2009). In addition, the external incentives of internationalization, such as overseas demand factors, fall in domestic demand or excess capacity and reduction in costs of production were suggested (Korsakienė

& Tvaronavičienė, 2012). A separate stream of scientific literature emphasized business support policy and investigated how to facilitate international entrepreneurship processes (Acs, Szerb, & Autio, 2016). The support for business expansion beyond national borders contributes to the following external incentives: access to finance, protection of intellectual property rights and information about foreign markets. Further, contributing policy environment increases the opportunities of small firms in international value chains. Keen and Etemad (2012) found that HGFs comprise all size and age categories and belong to international value chains. Though the policy measures increase the incentives of internationalization, the attitudes and perceptions of owners/managers play a crucial role in HGFs internationalization. Grounded on these arguments we hypothesize:

H2: There is a positive and significant association between external incentives perceived by the owner/professional manager and HGFs internationalization.

H3: There is a negative and significant association between external barriers perceived by the owner/professional manager and HGFs internationalization.

It is reasonable to expect that combined effect of environment perceptions and the strength of owners/managers' personality traits increase the firm's involvement in international markets. Thus, the following hypotheses are suggested:

H4: The more internationalized HGFs are the ones having owners/professional managers with strong entrepreneurial traits and perceptions of external barriers.

H5: The more internationalized HGFs are the ones having owners/professional managers with strong entrepreneurial traits and perceptions of external incentives.

While business environment stimulates the growth of the firms in a short term, strategy, entrepreneurial and management capabilities influence fast business growth in a long-term perspective. Brown and Mawson (2015) assert that internationalized HGFs with dynamic capabilities implement sophisticated business models and involve end-users. The investigations of HGFs from the perspective of business strategy emphasized the firm's dynamic capabilities that are essential aiming

"to build, release, and reconfigure a firm's internal resources and to respond to the changes of external and internal business environment" (Szalavetz, 2015). Thus, internal motives of internationalization are linked to the firm-specific factors and decision-maker characteristics.

Grounded on the resource-based perspective, the studies conclude that resources and capabilities acquired by entrepreneur have an important impact on the ability to enter foreign markets (Westhead, Wright, & Ucbasaran, 2001). Hence, human capital of entrepreneur in the form of experience, education and industry knowledge is seen as the obstacle and incentive to expand the business abroad. Meanwhile, the proponents of network based theory distinguish the significance of networks' development what contributes to the knowledge for internationalization (Kalinic & Forza, 2012). Thus, the decision-maker's resources and capabilities influence the attitudes and perceptions towards HGFs internationalization. Based upon presented arguments, we hypothesize:

H6: There is a positive and significant association between internal incentives perceived by the owner/professional manager and HGFs internationalization.

H7: There is a negative and significant association between internal barriers perceived by the owner/professional manager and HGFs internationalization.

As observed earlier, we expect that joint effect of environment perceptions and the strength of owners/managers' personality traits increase the firm's involvement in international markets and thus, additional hypotheses are suggested:

H8: The more internationalized HGFs are the ones having owner/professional manager with strong entrepreneurial traits and perceptions of internal barriers.

H9: The more internationalized HGFs are the ones having owner/professional manager with strong entrepreneurial traits and perceptions of internal incentives.

2. Methods
2.1 Sample and Data Collection
The data were obtained from the survey instrument used in a large-scale survey of Lithuanian HGFs. The survey employed to

collect data was elaborated by the authors. The survey investigated barriers and incentives of internationalization, personal characteristics of owners/professional managers, and performance of internationalization. The data were collected in October-December of 2014 directly questioning the management of HGFs. The sample was comprised of small firms included in the annual Lithuanian Gazelle list. The firms met the following criteria: 1) performance of the firm was profitable; 2) a minimum turnover of 0.29-40 million EUR in the base year; 3) growth of turnover was greater than 20% over three consecutive years. The final sample of 353 SMEs was selected taking into considerations previous investigations of small firms (Hansen & Hamilton, 2011; Moen, Heggeseth, & Lome, 2016). The industry distribution according to NACE classification corresponded to the broad small firms' distribution by the business sector in Lithuania (Tab. 1) and confirmed the notion that gazelles exist in all sectors (Li & Rama, 2015).

Tab. 1: **The industry distribution of the sample firms**

Industry: the main activity of firm	Number of firms	%
Manufacturing including recycling (NACE section D)	79	22.4
Wholesale trade and commission trade except motor vehicles, motorcycles (NACE section G.51)	64	18.2
Retail trade (excl. motor vehicles & -cycles); repair personal & household goods (NACE section G.52)	34	9.6
Business services, incl. financial services and real estate (NACE section J, K)	10	2.8
Construction: preparation, drilling, roads, buildings, installation, plumbing, plastering, etc. (NACE section F)	53	15.0
Sale, maintenance and repair of motor vehicles (NACE G.50)	13	3.7
Transport, travel agencies, post & communications (NACE section I)	22	6.2
Other activities	78	22.1
Total	**353**	**100**

Source: authors' calculation

2.2 Variables and Measures

The limited resources of small firms lead to the exporting as the least committed mode of internationalization (Manolova, Manev, & Gyoshev, 2010). Some investigations confirm that firm's exporting decision is appropriate measure of internationalization (Pinho & Martins, 2010). Thus, aiming to investigate if the firm is engaged in internationalization processes or not, the dependent variable was developed. The firm's internationalization decision variable (D_EXP) is taking the value 0 if the firm was not engaged in the direct exporting and the value 1 if the firm was engaged in the direct exporting.

The first independent variable was related to entrepreneurial traits. Considering former investigations, a number of personality traits was selected (Rauch & Frese, 2007; Brandstätter, 2011). Consequently, the respondents were asked to assess the following perceived personality traits: proactiveness, tenacity, need for achievement, stress tolerance, goal orientation, need for autonomy, innovativeness, endurance, flexibility, passion for work, risk taking propensity, self-control, creativity, responsibility, authoritativeness. The answers were given on a five-point scale ranging from (1) "very weak trait to (5) "very strong trait". For instance, the respondent who scored higher was supposed to develop stronger entrepreneurial traits and demonstrate more efficient entrepreneurial behavior than the respondent who scored lower. The measures were summed aiming to calculate the strength of entrepreneurial traits (ABL) variable. The ABL variable is continuous ranging from 15 to 75.

Following previous investigations (Johnston & Czinkota, 1985; Hutchinson, Fleck, & Lloyd-Reason, 2009; Kalinic & Forza, 2012), the perceptions of respondents about the barriers and incentives for internationalization let us develop four independent variables. The respondents were asked to assess the importance of the following perceived internal incentives: available contacts and relationships, adaptation of marketing activities to the requirements of foreign markets, exceptional information about foreign market opportunities and image of Lithuanian firms as reliable partners. In addition, external incentives perceived by the respondents were as follows: similar business environment of foreign markets, protection of intellectual property in foreign markets, national programmes promoting exporting, cooperation between business and science, favourable currency exchange rates. The answers to the questions were given on a three-point scale ranging from (1) "not important", to (3) "very important". The measures of internal incentives were summed aiming to form IMP variable. The IMP variable is continuous ranging from 4 to 12. The measures of external incentives were summed and the IMP* variable was developed. The IMP* variable is continuous ranging from 5 to 15.

The prevailing scientific discussion has led to the following impediments, perceived by the respondents: a lack of adequate governmental support, bureaucratic procedures and difficult paper work, transport costs, tariffs or quotas for foreign markets, other laws and regulations in foreign markets, other business cultures in foreign countries, political instability in foreign markets, low awareness of Lithuanian firms abroad, and weak image of Lithuania as the country. The respondents assessed the following perceived internal barriers: a lack of adequate market information, a lack of sufficiently qualified personnel, knowledge of foreign languages, and quality of products or/and services, conformity of products or/and services to national standards, price of products and/or services, a lack of financing and a payment risk. The answers to the questions were given on a three-point scale ranging from (1) "not important", to (3) "very important". The measures of external barriers were summed aiming to form RED* variable. The RED* variable is continuous ranging from 9 to 27. The measures of internal barriers were summed and the RED variable was developed.

The RED variable is continuous ranging from 8 to 24.

Following other studies (Manolova, Manev, & Gyoshev, 2010), we controlled for the industry, firm level and personal level factors. Taking into consideration the number of internationalized firms, at the industry level we developed ACT variable (distinguished in three groups: 1 – manufacturing including recycling, 2 – whole sale trade and commission trade except motor vehicles, motorcycles and 3 – other). The firm level factors were as follows: the number of employees and the business establishment. The firm's number of employees let us to develop EMP variable (distinguished in three groups: 1 – up to 10 employees; 2 – from 11 to 49 employees; 3 – from 50 to 249 employees). The firm's age let us develop AGE variable (distinguished in five groups: 1 – established before 1995; 2 – established from 1995 to 1997; 3 – established from 1998 to 2002; 4 – established from 2003 to 2006; 5 – established in 2007 and later). Considering personal level factors, we controlled for the owners (OWN variable: 1 owner; 0 other) and managers (DIR variable: 1 manager; 0 other), the presence of managerial experience (BRE) and foreign languages (LEN). The managerial experience was grouped into five groups: 1 – no experience; 2 – up to 1 year experience; 3 – experience from 1 to 5 years; 4 – experience from 6 to 10 years; 5 – more than 10 years' managerial experience. The number of foreign languages was grouped in four groups: 1 – zero foreign languages; 2 – one foreign language; 3 – two foreign languages and 4 – three and more foreign languages.

Notably, the binary logistic regression was used as the method of data analysis. The method is commonly used aiming to predict the occurrence of the dependent variable (Hosmer & Lemeshow, 2000). Thus, the functional formulation of the binary logistic regression can be presented as follows:

$$P(\text{internationalization} = 1) = \frac{\exp\left\{z\left(\vec{x}_i\right)\right\}}{1 + \exp\left\{z\left(\vec{x}_i\right)\right\}}; \quad (1)$$

where $z\left(\vec{x}_i\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots + \beta_k X_k$

Notably, the betas are the coefficients for the explanatory variables X_k.

Tab. 2: Descriptive statistics

Model variables	All firms n = 353		Owners n = 83		Professional managers n = 131	
	Mean (Min-Max)	Standard deviation	Mean (Min-Max)	Standard deviation	Mean (Min-Max)	Standard deviation
D_EXP	0.32 (0-1)	0.467	0.48 (0-1)	0.503	0.35 (0-1)	0.479
OWN	3.32 (0-1)	1.494	-------	--------	-------	--------
DIR	3.23 (0-1)	1.923	-------	--------	--------	--------
LEN	3.23 (1-4)	0.654	3.27 (1-4)	0.717	3.30 (1-4)	0.687
EMP	2.19 (1-3)	0.697	2.04 (1-3)	0.633	1.97 (1-3)	0.712
AGE	2.94 (1-5)	1.425	2.52 (1-5)	1.382	2.78 (1-5)	1.432
ACT	2.54 (1-3)	0.745	2.13 (1-3)	0.908	2.34 (1-3)	0.821
ABL	68.24	9.869	69.46	7.149	69.38	10.247
RED*	20.12	6.371	16.47	4.792	17.34	5.171
RED	10.16	3.523	8.77	2.591	8.68	2.713
IMP*	11.49	3.538	11.00	3.139	10.48	3.054
IMP	6.51	2.062	6.17	1.710	6.38	1.903
BRE	3.69 (1-5)	1.122	4.71 (1-5)	0.530	4.50 (1-5)	0.807

Source: authors' calculation

3. Results and Discussion

The sample of 353 firms let us assess two groups: firms managed by owners and firms managed by professional managers. Firstly, descriptive statistics was performed aiming to compare these two groups. Descriptive analysis is presented in Tab. 2. Later on, a test of equality of means between two groups of the firms was performed. The "ANOVA" tests were performed for continuous variables, the Mann-Whitney tests – for ordinal variables and the Chi-Square tests for nominal variables. The results are presented in Tab. 3.

The data of descriptive statistics let us conclude that the percentage of firms involved into internationalization exceeds 32 percent. The differentiation between the firms disclosed that the percentage does not vary substantially. The firms managed by the owners are tended to become international more in comparison to the firms managed by the professional managers. On the other hand, the difference between groups is not very large. The test of equality was performed and the data revealed that the difference between the average for the firms with owners and the professional managers is significant ($0.01 < p < 0.05$). Though scientific literature emphasizes risk-aversion tendency among SMEs owners, our findings contradict the opinion that the firms managed by the owners tend to focus on domestic markets (Cerato & Piva, 2012).

Some control variables such as: the firm's number of employees (EMP) and the presence of managerial experience (BRE) take on higher value in the case of the firms managed by the owners in comparison to the firms managed by the professional managers. The test of equality of means confirms that the differences are significant for these variables. Though the

Tab. 3: Test of equality of means between owners/professional managers

	Difference between means
D_EXP	0.13** (0.041)
EMP	0.07** (0.031)
ACT	0.09*** (0.001)
BRE	0.21*** (0.000)
RED*	0.87*** (0.000)
RED	0.09*** (0.000)
IMP*	0.51** (0.043)
IMP	0.21 (0.908)
ABL	0.08 (0.783)
AGE	0.26 (0.282)
LEN	0.03 (0.535)

Source: authors' calculation

Notes: *p<0.1; **p<0.05; ***p<0.01

literature reveals that the firms managed by the owners lack of management competencies and are tended to be smaller in size (Cerrato & Piva, 2012), our results indicate that HGFs managed by the owners have higher number of employees. While the owners of HGFs demonstrate higher presence of managerial experience, the bigger size of this group of firms is not surprising. These findings are consistent with human capital theory, emphasizing the interrelationship between the size of firm and accumulated human capital of firm's leaders (Wright, Westhead, & Ucbasaran, 2007). Leaders' managerial experience play a crucial role in the growth of the firm, since prior experience in this task will be more effective in facilitating the achievement of business objectives (Dobbs & Hamilton, 2007). The control variable such as the industry (ACT) takes on higher value in the case of the firms managed by the professional managers. The test of equality of means demonstrates that the difference is significant. Thus, bigger number of firms managed by the owners belongs to the manufacturing and whole sale trade industries than to the other industries.

While perceived external barriers (RED*) takes higher values in the case of the firms managed by professional managers, perceived internal barriers (RED) and perceived external incentives (IMP*) takes on higher value in the case of the firms managed by the owners. The test of equality of means let us observe that the differences were significant for these variables. However, we found no other studies that compared these perceptions of owners and professional managers.

Correlation among variables is presented in Tab. 4. The significant positive correlation is observed between the strength of entrepreneurial traits (ABL) and internationalization (D_EXP). Another significant positive correlation is between the involvement of owner (OWN) and internationalization (D_EXP), but at a lower level. Meanwhile, significant and negative correlations exist between perceived external incentives and barriers (IMP*, RED*) and internationalization (D_EXP). Less significant and negative correlation exists between perceived internal barriers (RED) and internationalization (D_EXP). Notably, the signs are negative for RED*, RED and IMP* variables. Considering the fact, that the higher values were assigned to the answers "very important", the firms are tended to be involved into internationalization activities if internal, external barriers and external incentives are perceived as less important.

While the dependent variable is dichotomous, the Binary Logistic Regression Model is selected for statistical analysis. In this type of statistical analysis maximum

Tab. 4: Correlation matrix

	AGE	DIR	OWN	ACT	BRE	EMP	LEN	ABL	RED*	RED	IMP*	MP	D_EXP
AGE	1												
DIR	-0.003	1											
OWN	0.100*	-0.428***	1										
ACT	0.010	-0.029	-0.164***	1									
BRE	0.294***	0.202***	0.266***	-0.119**	1								
EMP	0.235***	-0.100*	-0.031	-0.130**	0.059	1							
LEN	-0.077	0.038	0.001	0.001	-0.017	-0.091*	1						
ABL	-0.099*	0.034	0.029	-0.111**	0.011	0.016	0.166***	1					
RED*	0.005	-0.117**	-0.169***	0.151**	-0.284***	0.102*	0.049	-0.087*	1				
RED	-0.016	-0.149***	-0.091*	0.103**	-0.294***	0.050	0.034	-0.078*	0.781***	1			
IMP*	-0.055	-0.121**	0.000	0.043	-0.166***	0.078*	0.045	0.064	0.652***	0.595***	1		
IMP	-0.090*	-0.001	-0.062	-0.021	-0.086*	0.100*	0.070	0.103**	0.475***	0.383***	0.723**	1	
D_EXP	-0.051	-0.024	0.133**	-0.450***	-0.108**	0.011	0.096*	0.195***	-0.125***	-0.115**	-0.146***	-0.063	1

Source: authors' calculation

Notes: *p<0.1; **p<0.05; ***p<0.01

likelihood was used aiming to find the function that would maximize our ability to predict the probability of the firm's internationalization decision variable (D_EXP) Y=1 based on what we know about X (predictors). There are several different methods that can be used in logistic regression, but in this analysis the „enter" method is applied, because this is the only appropriate method for theory testing (Studenmund & Cassidy, 1987). The contribution of individual predictors in the models was examined by the significance of the likelihood ratio test, a score test and the Wald statistic (Hosmer & Lemeshow, 2000).

The adopted approach towards analysis of data let us develop few models. Model 1 and Model 2 presented in Tab. 5 for owners and for managers separately reveal low Nagelkerke's R^2 values (ranging from 0.311 to 0.341). As we know, there is no close analogous statistic in logistic regression to the coefficient of determination R^2. Moreover, the Cox and Snell's R-Squared attempts to imitate multiple R-Squared based on 'likelihood', but its maximum usually is less than 1.0 and make it difficult to interpret. The Nagelkerke modification that ranges from 0 to 1

is a more reliable measure of the relationship. Additionally, the Nagelkerke's R^2 will normally be higher than the Cox and Snell measure. In our case the Nagelkerke's R^2 indicate not very strong relationship, which varies from 31.1% till 34.1% between the predictors and the prediction in the presented models. It is worth noting that similar values are observed in other investigations (e.g. Manolova, Manev, & Gyoshev, 2010; Cerato & Piva, 2012). Notably, these models are developed without interactions and contain propositions H1; H2; H3; H6; H7;

The control variable the industry (ACT) is positive and takes on very significant values. In the model 1 (Tab. 5 for owners), for the case of the industry the positive value is taken as equal to one ($\beta_{ACT=1}$=2.406***/2.359***) and the positive value is taken as equal to two ($\beta_{ACT=2}$=1.045***/1.177***). Similar values are observed in the model 2 (Tab. 5 for professional managers): the positive value is taken as equal to one ($\beta_{ACT=1}$=2.488***/2.446***) and the positive value is taken as equal to two ($\beta_{ACT=2}$=1.041***/1.177***). The interpretation is as follows: for the firms belonging to the manufacturing and whole sale trade industries

we can expect more internationalization than belonging to the other industries. The obtained data correspond to other investigations focused on Lithuania's export trends and competitiveness (Travkina & Tvaronavičienė, 2011). While manufacturing industry is mostly export-oriented type of economic activity in Lithuania, it is not surprising that for HGFs we can expect more internationalization. Notably, our results are in line with other investigations which reveal that whole sale industry is the second largest exporting service industry in Lithuania after transport (Rodríguez et al., 2018). Meanwhile, the control variable the number of foreign languages (LEN) is negative and takes on significant values. In the model 1 (Tab. 5

Tab. 5: **Model 1 and Model 2**

Independent variables	Model 1. Dependent variable D_EXP (for owners)				Model 2. Dependent variable D_EXP (for professional managers)			
	Coeff. β	Standard error	Coeff. β	Standard error	Coeff. β	Standard error	Coeff. β	Standard error
Constant	-3.551**	1.458	-0.147	0.710	-4.159***	1.454	-0.750	0.703
[AGE=1]	0.157	0.461	0.188	0.457	0.183	0.464	0.209	0.461
[AGE=2]	0.440	0.415	0.504	0.409	0.473	0.415	0.538	0.409
[AGE=3]	0.045	0.383	0.127	0.379	0.016	0.383	0.108	0.379
[AGE=4]	0.209	0.417	0.242	0.408	0.213	0.419	0.247	0.410
[AGE=5]	0(a)	---	0(a)	---	0(a)	---	0(a)	---
[ACT=1]	2.406***	0.344	2.359***	0.336	2.488***	0.345	2.446***	0.338
[ACT=2]	1.045***	0.337	1.177***	0.330	1.041***	0.338	1.177***	0.331
[ACT=3]	0(a)	---	0(a)	---	0(a)	---	0(a)	---
[OWN=0]/ [DIR=0]	-0.373	0.320	-0.407	0.318	0.495*	0.282	0.500*	0.280
[OWN=1]/ [DIR=1]	0(a)	---	0(a)	---	0(a)	---	0(a)	---
[BRE=1]	-0.597	1.191	-0.174	0.952	-0.967	1.206	-0.536	0.966
[BRE=2]	-0.569	0.908	-0.555	0.938	-0.625	0.911	-0.661	0.941
[BRE=3]	-0.276	0.421	-0.233	0.417	-0.512	0.426	-0.480	0.422
[BRE=4]	-0.101	0.342	-0.085	0.340	-0.177	0.342	-0.168	0.339
[BRE=5]	0(a)	---	0(a)	---	0(a)	---	0(a)	---
[EMP=1]	0.526	0.435	0.372	0.422	0.633*	0.436	0.486	0.423
[EMP=2]	0.028	0.335	-0.056	0.328	0.077	0.334	0.003	0.328
[EMP=3]	0(a)	---	0(a)	---	0(a)	---	0(a)	---
[LEN=2]	-0.461	0.435	-0.654*	0.420	-0.461	0.436	-0.659*	0.421
[LEN =3]	-0.448*	0.289	-0.481*	0.286	-0.484*	0.289	-0.523*	0.287
[LEN =4]	0(a)	---	0(a)	---	0(a)	---	0(a)	---
ABL	0.049***	0.018	---	---	0.050***	0.018	---	---
RED*	0.047	0.042	0.030	0.041	0.046	0.042	0.028	0.041
RED	-0.097	0.072	-0.095	0.071	-0.097	0.072	-0.095	0.071
IMP*	-0.142**	0.070	-0.123*	0.068	-0.146**	0.069	-0.124	0.068
IMP	0.116	0.102	0.136	0.101	0.123	0.102	0.143	0.101
R^2	0.336		0.311		0.341		0.315	

Source: authors' calculation

Notes: (a) Parameter is assigned a value of zero because it is redundant. Nagelkerke's R^2. *p<0.1; **p<0.05; ***p<0.01

Tab. 6: Model 3 and Model 4

Independent variables	Model 3. Dependent variable D_EXP (for owners)				Model 4. Dependent variable D_EXP (for professional managers)			
	Coeff. B	Standard error	Coeff. β	Standard error	Coeff. β	Standard error	Coeff. B	Standard error
Constant	5.185	5.384	0.754	0.683	5.104	5.384	0.385	0.664
[AGE=1]	1.139***	0.455	1.117***	0.453	1.152***	0.456	1.127***	0.453
[AGE=2]	0.644*	0.400	0.645*	0.400	0.638*	0.400	0.638*	0.400
[AGE=3]	0.393	0.367	0.399	0.367	0.349	0.364	0.354	0.364
[AGE=4]	0.821**	0.407	0.817**	0.408	0.857**	0.404	0.855**	0.405
[AGE=5]	0(a)	---	0(a)	---	0(a)	---	0(a)	---
[ACT=1]	1.880***	0.373	1.866***	0.372	1.942***	0.371	1.930***	0.370
[ACT=2]	0.526*	0.339	0.483*	0.335	0.518*	0.338	0.474*	0.334
[ACT=3]	0(a)	---	0(a)	---	0(a)	---	0(a)	---
[OWN=0]/ [DIR=0]	-0.415	0.322	-0.426	0.322	0.118	0.269	0.119	0.269
[OWN=1]/ [DIR=1]	0(a)	---	0(a)	---	0(a)	---	0(a)	---
[BRE=1]	0.844	1.068	0.800	1.047	0.674	1.080	0.626	1.058
[BRE=2]	-0.041	0.834	-0.023	0.826	-0.148	0.827	-0.134	0.818
[BRE=3]	-0.688*	0.4089	-0.724*	0.407	-0.829**	0.409	-0.869**	0.407
[BRE=4]	-0.052	0.334	-0.066	0.332	-0.115	0.331	-0.131	0.329
[BRE=5]	0(a)	---	0a	---	0(a)	---	0(a)	---
[EMP=1]	-0.100	0.414	-0.097	0.415	-0.042	0.414	-0.037	0.415
[EMP=2]	-0.542*	0.321	-0.537*	0.320	-0.491*	0.318	-0.485*	0.317
[EMP=3]	0(a)	---	0a	---	0(a)	---	0(a)	---
[LEN=2]	-0.656*	0.419	-0.597*	0.413	-0.654*	0.419	-0.587	0.412
[LEN =3]	-0.500*	0.281	-0.515**	0.280	-0.524*	0.280	-0.541**	0.279
[LEN =4]	0(a)	---	0(a)	---	0(a)	---	0(a)	---
ABL	-0.064	0.078	---	---	-0.068	0.078	---	---
IMP*	0.131	0.766	0.211	0.759	0.155	0.768	0.239	0.762
IMP	2.257**	1.079	2.550***	1.025	2.185**	1.079	2.500**	1.024
RED*	-0.134	0.391	-0.100	0.390	-0.125	0.391	-0.089	0.391
RED	-2.348***	0.772	-2.224***	0.752	-2.389***	0.770	-2.257***	0.750
INT_ABL *IMP*	-0.004	0.011	-0.005	0.011	-0.005	0.011	-0.006	0.011
INT_ABL *IMP	-0.030**	0.015	-0.034**	0.015	-0.029*	0.015	-0.034**	0.015
INT_ABL *RED*	0.003	0.006	0.003	0.006	0.003	0.006	0.003	0.006
INT_ABL *RED	0.032***	0.011	0.030***	0.012	0.032***	0.011	0.030***	0.011
R^2	0.340		0.338		0.336		0.334	

Source: authors' calculation

Notes: (a) Parameter is assigned a value of zero because it is redundant. Nagelkerke's R^2. *p<0.1; **p<0.05; ***p<0.01

for owners), the negative value is taken as equal to three ($\beta_{LEN=3}$=-0.448*/-0.481*). Similar values are observed in the model 2 (Tab. 5 for professional managers): the negative value is taken equal to three ($\beta_{LEN=3}$=-0.484*/-0.523*). Though the literature discloses the relationship between knowledge of foreign languages and internationalization (Wright, Westhead & Ucbasaran, 2007), our findings reveal that the number of foreign languages is decreasing while internationalization is increasing. The explanation resides in the fact that the EU and Russia remains the main destination of Lithuania's export (Travkina & Tvaronavičienė, 2011). Meanwhile, due to the former and current ties, Russian and English languages remain the most commonly studied foreign languages in Lithuania (Korsakienė et al., 2017).

Regarding the independent variable, we can observe that the results that relate the strength of entrepreneurial traits (ABL) and internationalization (D_EXP) in both models (Tab. 5) are positive and very significant (Model 1: β_{ABL}=0.049***; Model 2: β_{ABL}=0.050***). The interpretation is as follows: the strength of owner/professional manager's personality traits increase internationalization of HGFs. The scholars point out that personality traits determine actions and thus, explain entrepreneurial behavior of owners and professional managers in international markets (Brandstätter, 2011; Veciana, 2007; Acedo & Jones, 2007). Meanwhile, the investigations of small firms carried out in emerging markets' context emphasized the role of personal characteristics (Manolova, Manev, & Gyoshev, 2010). Hence, as expected, the strength of founder/managers' personality traits stimulate international expansion of HGFs. Therefore, we can accept hypothesis H1.

Meanwhile, we can observe that the results, relating the perceptions of external incentives (IMP*) and internationalization (D_EXP) in the first model (Tab. 5 for owners), are negative and significant (Model 1: β_{IMP*}=-0.142**/-0.123*). However, in the second model (Tab. 5 for professional managers) the results are as follows: β_{IMP*}=-0.146**/-0.124. This means that the external incentives perceived by the owner/professional manager are decreasing while HGFs internationalization is increasing. Thus, the hypothesis H2 is partly approved. While scientific literature is emphasizing the importance of various external incentives in

internationalization of small firms (Acs, Szerb, & Autio, 2016), our study reveals that increased internationalization of HGF's diminish their importance. Political measures focused on stimulation of small firms' internationalization do not differentiate the firms considering their capacities. Though initial support for internationalization is essential, the assessment of firms' capacities and their differentiation in later periods of activities is needed. Meanwhile, the obtained data let us conclude that the hypotheses H3, H6, H7 are not approved.

The next step of analysis included the interaction variables. The obtained results are presented in Tab. 6. By including interactions into the analysis, we are aiming to reveal the combined effects of the variables ABL, IMP, IMP*, RED and RED*. The interactions of the variables ABL, IMP and IMP* are significant in some cases. The interactions of the strength of entrepreneurial traits and internal incentives are negative and significant in both models (Model 3: $\beta_{ABL*IMP}$ =-0.030**/-0.034**; Model 4: $\beta_{ABL*IMP}$ =-0.029*/-0.034**). Surprisingly, beta takes a negative sign. Considering the fact, that the higher values were assigned to the answers "very important", the firms are tended to be involved into internationalization if internal incentives are perceived as less important. However, we can interpret that the more internationalized HGFs are the ones having owners and professional managers with strong entrepreneurial traits and perceptions of internal incentives. Thus, the hypothesis H9 is approved. The interactions of the strength of entrepreneurial traits and perceived internal barriers are positive and significant in both models (Model 3: $\beta_{ABL*RED}$ =0.032***/0.030***; Model 4: $\beta_{ABL*RED}$ =0.032***/0.030***). We can interpret that the joint effect of the strength of entrepreneurial traits and perceptions of internal barriers positively influence internationalization of HGFs. Thus, the more internationalized firms are the ones having owners and professional managers with strong entrepreneurial traits and perceptions of internal barriers. The obtained results have led to the approved hypothesis H8. Meanwhile, the hypothesis H4 and H5 were not supported. While the literature suggest that internationalization decision is influenced and constrained by the perceptions of the decision-maker (Westhead, Wright, & Ucbasaran, 2001; Szalavetz, 2015), our findings extends the extant knowledge by revealing that awareness

of internal incentives and barriers combined with strong entrepreneurial traits leads to increased internationalization of HGFs. Though the attitude about internal and external barriers, hindering internationalization process of small firms, prevails (Hutchinson, Fleck, & Lloyd-Reason, 2009; Pinho & Martins, 2010), the investigations of HGFs do not support that approach.

Conclusions

The paper discloses the following contributions to the extant knowledge on HGFs in Eastern European markets' context. HGFs managed by the owners with significant managerial experience are tended to become international more contrary to what was suggested by other studies (Cerato & Piva, 2012). Nevertheless, the suggested hypotheses by which internationalization appears as a predictive variable did not differentiate between owners and professional managers. First, the obtained data indicate that strong personality traits, demonstrating entrepreneurial behavior of professional managers and owners, let the firms to exploit international opportunities. Thus, the results corroborate previous investigations disclosing that success of entrepreneurs and managers is impacted by a whole range of personality characteristics (Rauch & Frese, 2007). Hence, the traits of entrepreneurs and managers, matching entrepreneurial tasks, are good predictor of HGFs internationalization. The investigation extended the knowledge by demonstrating that the strength of owner/manager's personality traits and HGFs internationalization are interrelated. Second, the study approved the hypothesis that the importance of external incentives, perceived by the owners and managers, are decreasing while HGFs internationalization is increasing. Small firms are usually constrained by the liability of newness and smallness in foreign markets. The established market position abroad leads to the accumulation of appropriate firm level capabilities as well as management capabilities. The accumulated capabilities of HGFs diminish the significance of external incentives (e.g. export promotion programs, etc.). Thus, the investigation leads to the conclusion that the extent of HGFs internationalization leads to the decrease in importance of external incentives. The expectations that the internal incentives,

internal barriers and external barriers per see are good predictors for internationalization of HGFs were not supported. Hence, the findings do not support prevailing attitude that internal and external barriers hinder the internationalization process of small firms (Hutchinson, Fleck, & Lloyd-Reason, 2009; Pinho & Martins, 2010). Meanwhile, the study found that the joint effect of entrepreneurial traits and perceptions of internal and external barriers are good predictors of HGFs internationalization. Owners and managers of HGFs are attributed to the entrepreneurial type of personality, capable to understand and overcome issues imposed by internal and external context.

Despite the comprehensiveness of the present study, a few limitations have to be outlined. First, the study was grounded on entrepreneurship literature and included a particular number of traits. The literature on entrepreneurial traits lacks the integrity and thus, future investigations have to consider other tasks matched traits. The owners and managers, who are defined as international opportunity oriented, require more close investigation in the future. In addition, more close investigation of separate traits and their impact on HGFs internationalization is seen as a fruitful avenue for future studies. Second, the study was conducted in the context of one country and thus, further investigations might target HGFs of other countries. Third, internationalization of HGFs is seen as a unique phenomenon and thus, the future investigations have to consider the measures of intensity and velocity.

The findings corroborate the business support policy, focused on internationalization of small firms. The policy makers can use the programs for personality traits development. For instance, the test on personality traits could serve as one of the possible means in financial support decision making process. Some traits can be changed through additional training and thus, internationalization supporting agencies have to consider this fact in developing training programs. Meanwhile, the owners and managers, who have strong intentions to internationalize small firms, have to assess their personality traits and conclude about their suitability to that task. The deficiencies of some traits can be compensated by attracting suitable partners or employees.

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Abstract

MODELLING INTERNATIONALIZATION OF HIGH GROWTH FIRMS: MICRO LEVEL APPROACH

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The role of owners/professional managers has been recognized as a vital in the development processes of high growth firms (HGFs), contributing to countries' productivity and competitiveness. The purpose of the paper is to identify and analyse some of the most significant factors, impacting internationalization of HGFs by investigating the attitudes of owners and professional managers. Theoretical discussion, related to international entrepreneurship, entrepreneurial traits and entrepreneurial perceptions, has led to the development of the research instrument. The analysis is based on a quantitative approach: the survey focuses on Lithuanian HGFs. The sample comprises 353 firms, included in the annual Gazelle list. The study does not reveal the difference between the attitudes of owners and professional managers. The results corroborate previous investigations disclosing that the traits of entrepreneurs and managers, matching entrepreneurial tasks, are good predictor of HGFs internationalization. The importance of external incentives, perceived by the owners and managers, are decreasing while HGFs internationalization is increasing. The joint effect of entrepreneurial traits and perceptions of internal and external barriers are good predictors of HGFs internationalization. The findings of the study are useful for the policy makers in the financial support decision making process and in the development of additional training programs. The implications for the managers of HGFs lie in the possibility to assess their personality traits and conclude about their suitability to that task. The research fills the gap in the extant knowledge by investigating micro-level factors and provides valuable findings on HGFs in Eastern European country.