The examination of competitiveness in the Hungarian small business sector and family businesses

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Abstract: While there are numerous researches on competition has been done, there is a lack of publication focusing on the examination of firm level competitiveness in particular in the small business sector. Based on the RBV and configuration theories, this paper aims to develop a conceptual model that is suitable to examine small businesses competitiveness. The model contains 56 individual variables and ten pillars. Following Ulbert and Szerb (2011) we amended the competitiveness point calculation methodology is taking into account the weakest points, called bottlenecks and the equalization of the marginal effects of the ten pillars. The study reports the most important findings about the distribution of competitiveness points in the Hungarian small business sector and conducts a cluster analysis. This analysis is based on the ten pillars of competitiveness and reinforces the heterogeneity of the Hungarian SMEs over the seven clusters. In addition we compare the performance of the fully family owned and other firms.

Additional notes and debating points: The paper is in a early version, so all comment are welcome. We think that the strengths of the paper is the complex examination of the competitiveness of small sized businesses and the application of the new methodology. However we are seeking to improve the conceptual model, the examination of the family businesses that lacks even the basic literature survey and we are looking for a potential to improve the analytical side of the paper as compared to descriptions.

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Introduction

Competitiveness is one of the most popular buzzword amongst economist, businessman and policy makers. Similar to many widespread phenomena, the meaning and the exact definition of competitiveness is still missing. Competitiveness has been examined from various points of views on the product, business unit, firm, industry, regional, national and sub-national levels. (Delgado et al 2012, Wang 2014). The two most well-known national competitiveness report series are provided by World Economic Forum (Global Competitiveness Index) and IMD (World Competitiveness Index). The importance of these indices is highlighted by the fact that they have been widely used by many countries as benchmarks. (IMD 2014, Sala-I-Martin 2013).

At the same time there has been much criticism about the various concepts of competitiveness starting from the vague definition, the lack of solid theoretic foundation, ad hoc selection of factors (Huggins et al 2013, Lall 2001). In particular, the policy influence of the competitiveness factors faced fierce criticism (Bristow 2010, Krugman 1994, Porter 1990). These criticisms also sign the non-decreasing importance of competitiveness research and debates contribute further to develop both the theoretical and practical side of competitiveness research (Delgado et al 2012).

While there is an agreement between the two emblematic researchers, Krugman and Porter, that firms and not countries or regions have competitiveness, the examination of firm level competitiveness is rather scare. In addition, many firm level competitiveness researchers pay particular attention on the institutional and environmental forces within which firms compete and neglect the individual characteristics (Szerb and Ulbert 2012). Porter's theory of the Five Forces is a typical example of how the five industry factors – the bargaining power of suppliers and buyers, the potential threat of new entrance, and substitutes as well as the intensity or rivalry – shape the strategy of the firm (Porter 1990). The firm can position itself broad in terms of the strategies of cost leadership, product differentiation and focus. By understanding the industry trends, leading managers can formulate efficient strategy to gain competitive advantage over other businesses. While the Porter model identifies the most important factors of competitiveness, it cannot explain the individual firm level differences in competitiveness within the same industry.

Another branch of approaches examines the characteristics of the firms themselves. Besides Porter, there are several traditional theories (Ambastha and Momaya 2004), such as structure-conduct-performance (SCP) and the resource based view (RBV) (Barney 1991). A common characteristic of these theories is the decisive importance "…to the firm's internal rather than to its external conditions for understanding its competitive market position" (Foss and Knudsen 1996, p.13). The present study builds our arguments based on RBV.

There is a high demand for those practical theories and solutions that provide tailor-made recommendations to policy makers or business leaders and strategists as opposed to uniform suggestions. One of the most popular basic analytical tool, the SWOT analysis that categorizes the inside and outside factors based on positive potentials and unfavorable threats, can be criticized because of the too individualistic approach. (Helms and Nixon 2010, Hill and Westbrook 1997). There would be a need of such analytical tools that provides the „golden mean" between generalization and individual characteristics.

A common characteristic of firm level competitiveness examination is the dominance of large firms (Cerrato and Depperu 2011, Rugman and Verbeke 2001). It is probably more comfortable to investigate those firms that are publicly listed and/or have relative reliable data and information than telling something about an amorphous, heterogeneous crowd with unreliable data reports and pieces of information. The neglect of the smaller firms in competitiveness researches can lead to a situation where many important effects remain under the veil that potentially influence the competitiveness of larger firms, industries, regions or even nations.

The basic aim of this study to create a Small Business Competitiveness Index (SBCI) that is a proper tool to examine the basic individual characteristics of Hungarian SMEs and to apply it to a recently created sample of small businesses. The antecedent of this study is provided by Szerb and Ulbert (2012), however, the present version is much more sophisticated both in terms of the involved factors of competitiveness as well as in the methodology of calculation. The SBCI has theoretical roots in the resource based theories but we take into consideration the small business specialties. The SBIC based on its ten pillars – Human capital, Financing, Networking, Product, Administrative routines, Competitive strategy, Technology, Marketing, Internationalization, and Online presence and ICT – and 56 complex variables is capable to

provide a multifaceted examination of firm level competitiveness that has not been before. In particular, we are interested in answering two questions: How competitive Hungarian small businesses and what is the difference between the competitiveness of purely family owned (100% family ownership) and other businesses?

Firm level competitiveness

It is well-known that competitiveness can be examined product, business unit, firm, industry, local/regional national and sub-national levels (Porter 1996, Lengyel 2000). The basic investigated unit of research of this study is at the firm level. At the same time, the SBIC is a partially proper tool to apply to the product and business unit levels.

The different levels of competitiveness closely correlate to the view of different importance of the competitiveness factors. The Porter diamond model, a common tool to investigate national level competitiveness, emphasizes factor conditions, demand conditions, related and supportive industries, the firm strategy and rivalry. According to Porter, this analysis should be done only for the most important clusters of a country. The examination of positive externalities in particular agglomeration dominates in regional level competitiveness research (Fujita et al 1999, Rozenblat 2010, Turok 2004). Agglomeration influences are stronger in clusters where competing and at the same time collaborating firms exist (Lengyel 2001, Malberg és Maskell 2002, Porter 1998). Industry dynamics are shapes by innovation and technological development together with knowledge sharing practices (Bell és Albu, 1999, Pawitt 1984, Rothwell,1992).

A common feature of the above mentioned competitiveness theories is the highlight of the importance of institutional factors. At the same time they assume that firms automatically follow changes in the institutional setup and neglect firm level individual characteristics and capabilities. The most important problem of Porter's Five Forces model is the lack of internal individual factors. (Grant 1991). At the same time RBV theories claim that internal firm level characteristics are the major components of competitiveness (Barney 1991, Peteraf 1993, Rugman és Verbeke 2002, Wernerfelt 1984).

According to Barney the long run competitiveness of a firm depends mostly on its internal characteristics, resources, and capabilities (Barney 1991, 2001). The leaders of the firms

should look inside those bundle of resources and capabilities that valuable, rare, difficult and costly to imitate. These resources should be harmonized by the internal organization of the firm with outside environmental changes (Barney 1995, Grant 1996). These four elements – valuable, rare, in-imitability, non-substitutability – form the bases of the practically applied VRIO analysis together with another important factor that is organizational fit (Barney and Griffin 1992, Rouse and Daellenbach, 2002).

A further issue of firm level competitiveness is associated with firm size. Most analyses focus on large, sometimes multinational firms or clusters (Cerrato és Depperu 2011, Chikán 2006, Lengyel 2001, Porter 1990, 1998, Rugman and Verbeke 2001), while there is a lack of small business related competitiveness studies. On the contrary to Porter and his followers who maintain that competitiveness should only be examined in those sectors where a country has certain competitive advantage, we suggest and emphasize a more general investigation that refers to all the sectors in the economy and includes smaller size businesses too. Moreover, if we accept that small firms are not scaled down versions of large firms but they differ in structure, style of management, and other important characteristics, then examining competitiveness in the small and medium size business sector (SME) requires special methodology (Dean et al 1998, Man et al 2002, Malecki and Tootle 1996).

Conceptual model and methodology

As our basic aim is to derive a unique competitiveness index we need to identify the factors that lead to competitiveness of SMEs (Chaudhuri and Ray 1997). While there is an agreement amongst leading scholars that basically firms - not nations and regions - compete (Porter 1990), most competitiveness concepts model firm competitive behavior within the framework of national or local environment. This approach assumes that the macroeconomic or industry specific characteristics, institutions, and policies affect the performance of the firms in a given geographical entity, industry, cluster region or nation. The application of regional, national and aggregated firm data is also typical in this *top-down* approach. Though this methodology can be useful to analyze institutional development, it does not help us to understand the behavior of an individual firm or the variations of different firm characteristics in the same industry. This approach misses not only a vital microeconomic firm level aspect of competitiveness but also tends to view aggregate variables in an inappropriate way (see

Krugman 1994 critique). Consequently, we consider the *bottom-up* approach as a more useful way to understand the differences in firm level competitiveness.

Since most competitiveness theories and empirical studies focus on large firms, the conceptual model should reflect that small businesses are not scaled down versions of large firms but they differ in organization, style of management and the way of competition (Man et al 2002). For example, of Porter's three strategic choices of cost leadership, differentiation and focus, only the last one is appropriate to most small business (Porter 1998). Despite increasing globalization, small firms compete mainly in the local, domestic markets or market niches. Analyzing the internet offered new opportunities, Tetteh and Burn (2001) claims that small firms have to apply entirely different strategies and management techniques than do large firms. Leadership and management differences in the small firm-large firm setup are reinforced by Gray and Mabey (2005). Innovation is also a frequently mentioned factor where small businesses behave differently (Malecki and Tootle 1996, Verhees and Meulenberg 2004, Utterback and Suárez 1993). SMEs regularly face the lack of proper inside resources that is particularly vital in terms of the human resources and innovation (Bridge et al 2003, Storey 1994). As a consequence, networking, outside collaboration, co-operation as well as efficient inside knowledge-sharing methodologies are the core of effective competition of the SMEs (Dyer and Singh 1998, Eisenhardt and Schoonhoven 1996, Hakansson and Snehota 1989, Perry 1999).

Inspired by the strategic management, the small business and the RBV literature, (Aragón-Sánchez és Sánchez-Marín 2005, Chikán and Czakó 2006, Dholakia and Kshetri 2004, Grant 1991, Lengnick 1992, Man et al 2002, McGahan 1999, Peteraf 1993, Ray et al 2004, Singh et al 2007) we define small business competitiveness in a following way:

Small business competitiveness is defined as the mutually dependent bundle of human capital, financing, networking, offered product, administrative routines and processes, competitive strategy, applied technology, marketing methodology, internationalization, and online presence resources and capabilities that allow a firm to compete effectively with other firms and serve customers with valued goods/services.

Although, the external institutional factors of competition can be important, we focus on the internal factors.

Besides the identification of the factors of competitiveness it is equally important to combine together the elements (Dess et al 1993). The configuration theory, introduced by Dennis Miller, argues that the elements of a system cannot fully be understood in isolation, so the investigation of the system as a whole is inevitable (Miller 1986). While it is easy to copy a single element, the competitive advantage lies '…in the power of the orchestrating theme and the degree of complementarity it engenders among the elements' (Miller and Whitney 1999, p. 13.). Miller describes three potential application of the configuration such as concepts, typologies/taxonomies and organizations (Miller 1996). From our perspective, the third approach is the most relevant when configuration is interpreted as a quality or property that varies among organizations. In this case configuration is the 'degree to which an organization's elements are orchestrated and connected by a single theme' (Miller 1996). The organizational fit is also present in the RBV theory (Barney 1995).

While pure theoretical models are not constrained by data and variable availability this is not valid in the cases of empirical investigations. Therefore, the suggested conceptual model in Figure 1 that is based on the definition of competitiveness and the configuration of the elements reflects the limitations of the data set.

The ten pillars of competitiveness consist of 56 variables. The selection of the variables is based on the literature and reflects to the RBV theory. The benchmarks are the best available scores in each variable case, all the other values are related to these benchmarks. Because of data limitation we could only involve the rarity category related variable in nine pillars except financing.

Another group of variables are supposed to reflect to the changes in the 2010-2012 time period. These are the training variable in the Human capital pillar, the product innovation in the Product pillar, the technology innovation in the Technology pillar, and the marketing innovation in the Marketing pillar.

Figure 1: The conceptual model of SME competitiveness

The last groups of variables are the factors calculated from the financial ratios over the 2010-2012 time period. Since it is not useful to build a large number of financial ratios into the model we used the factor analysis to derive the 15 financial factors. These financial factors can be found in each pillar except Online presence and ICT . Two factors, the value added and the profitability factors were left out from the competitiveness pillars. In all other cases we correlated the financial factor with the ten pillar values without the financial factor scores. (Table 1).

Table 1: The correlation between the pillars and financial ratios

	Operation management	liquidity	Indebtness	Investment	Buyer/seller relationship	Innovativeness	Marketing	Inventory	technology innovation	Financial leverage
Human capital					**X**					
Financing								**X**		
Networking					**X**					**X**
Product				**X**		**X**				**X**
Administrative routines	**x**									
Competitive strategy										
Technology						**X**			**X**	
Marketing						**X**	**X**			
Internationalization			**X**							
Online presence and ICT tools			**X**							

Table 1 shows those correlations that have significantly positive correlations. We note with red letters those factors that we applied in a particular pillar. Liquidity that has no significant correlation with any other pillars was assigned to the Finance factor.

The detailed description of the variables can be found in Appendix 1.

The maximum values of each pillar (benchmark) are based on the best Hungarian practices. During the calculation of the competitiveness points we also considered the mutual dependence of the pillars according to the configuration theory (Figure 1). We assumed that the performance of the system depends on the weakest link. The good performing pillar can only partially and not fully compensate for badly performing pillars. This imbalance pulls back the competitive performance of the particular firm (Szerb and Ulbert 2011).

By calculating the individual competitiveness scores, we follow seven points:

1 **The selection of the variables:** The variables are based on the data collection of the research named as „A complex analysis and modelling of the effect of energy producing, energy consuming and waste-managing technologies on corporate competitiveness, urban, regional and macroeconomics".

2 **The normalization of the variables:** The variables are normalized in the [0,1] range according to equation 1:

$$q_{i,p} = \frac{s_{i,p}}{\max s_{i,p}} \qquad (1)$$

all t= 1 ... w, the number of variables

where

$q_{i,p}$ normalized score of firm l and variable p
$s_{i,p}$ original score of firm l and variable p
$max\ s_{i,p}$ the maximum value of variable p

3 **The calculation of the pillar scores**: Pillar scores are calculated based on the average of the assigned variables. In the case of pillar j:

$$z_{i,(j)} = \frac{\sum_1^v q_{i,p}}{v} \qquad (2)$$

where

v: id the number of variables
$z_{i,j}$ the original pillar score of firm i and pillar j

4 **The normalization of the pillars*:*** Pillar scores are converted to the [0,1] range according to equation 3:

$$x_{i,j} = \frac{z_{i,j}}{\max z_{i,j}} \qquad (3)$$

all j= 1 ... 10, the number of pillars
ahol$x_{i,j}$ normalized score value of firm i and pillar j
$z_{i,j}$ original score value of firm i and pillar
$max\ z_{i,j}$ the maximum value of pillar j

5 **The equalization of pillar averages:** The averages of the ten pillars are quite different. It means that there are significant differences in reaching good scores in one pillar as compared to another one. As a consequence, the same marginal increases in the ten pillars are also different. In order to equalize the marginal effect we need a transformation of the ten pillars. First we calculate the average of the ten pillar averages.

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n} . \qquad (4)$$

Next, we transform $x_{i,j}$values to remain in the [0,1] range:

$$y_{i,j} = x_{i,j}^{k} \qquad (5)$$

where k is the "strength of adjustment", the k-th moment of X_j is exactly the needed average, $\overline{y}_j$. We have to find the root of the following equation for k

$$\sum_{i=1}^{n} x_{i,j}^{k} - n\overline{y}_j = 0 \qquad (6)$$

It is easy to see based on previous conditions and derivatives that the function is decreasing and convex which means it can be quickly solved using the well-known Newton-Raphson method with an initial guess of 0. After obtaining k, the computations are straightforward. Note that if

$$\begin{aligned} \overline{x}_j < \overline{y}_j \quad & k < 1 \\ \overline{x}_j = \overline{y}_j \quad & k = 1 \\ \overline{x}_j > \overline{y}_j \quad & k > 1 \end{aligned}$$

that is k be thought of as the strength (and direction) of adjustment.

6 **Penalization:** After the average adjustment we use the Penalty for Bottleneck methodology to calculate the after penalty pillar value for each firm:

$$h_{(i),j} = miny_{(i),j} + (1 - e^{-(y_{(i)j} - min\, y_{(i),j})}) \qquad (7)$$

where $h_{i,j}$ is the after penalty pillar value of firm i and pillar j
$y_{i,j}$the normalized pillar value for firm I and pillar j
y_{min} is $y_{i,j}$ minimal score value for firm i
i = 1, 2,……n = number of firms
j= 1, 2,…….m= number of pillars

7 **The calculation of the competitiveness points:** The competitiveness points for each firms can be received as the summation of the ten pillars.

$$SBCI_i = \sum_{j}^{m} h_{i,j} \qquad for\ all\ i \qquad (8)$$

where $SBIC_i$ is the competitiveness pillar score of firm i

Data collection and description

The data collection for the examination of the competitiveness of small businesses was led by the University of Pécs, Faculty of Business and Economics within the framework of EU supported research, TÁMOP 4.2.2 A – 11/1/KONV-2012-0058. The data collection was conducted by a professional survey firm. The initial sample consisted of two sources. First we selected from our previous research (Szerb and Ulbert 2011) 549 firms out of 795 that were still operational in 2012. Second, we selected randomly 10 000 firms from the OPTEN company database. The OPTEN database includes all the present and former businesses registered in the Business Registry. After the cancellation of the duplications we received 9946 firms from the OPTEN database. Firms were randomly selected but stratification was applied to make sure to have enough businesses in each size category, region and industry sector. The size distribution of the sample as compared to the total number of businesses reported by the Hungarian Statistical Office (HSO) is presented in Table 2. Stratification caused a smaller sample in the 1-4 employee sized category and a larger sample in all the other four categories than implied by the representativeness principle. in the final sample, we had to cancel 150 firm because of the incompleteness of the questionnaire.

Table 2: The distribution of the sample based on the number of employees in 2007 as compared to the total number of the same size businesses in 2006

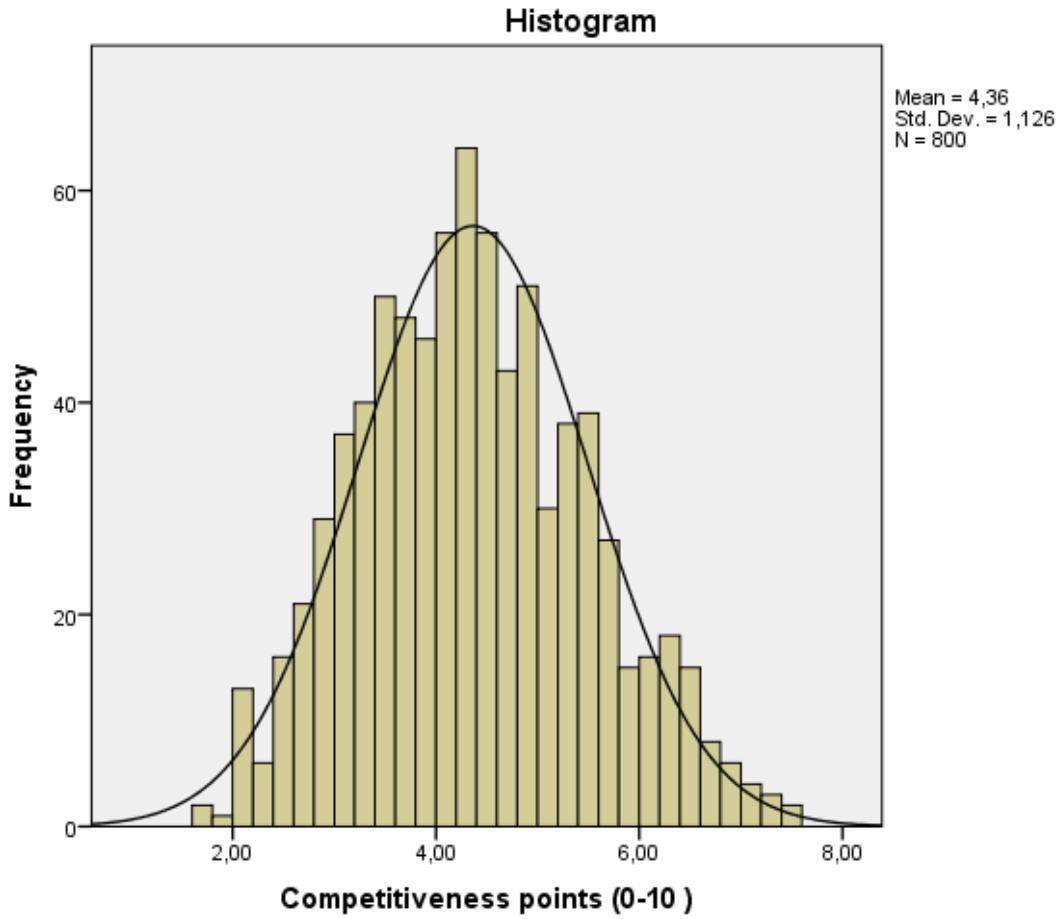
Number of employees 2012	Total number/ percent of businesses in 2012*		Initial Sample		Final Sample	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
1-4	575 476	89,4%	5334	53,6%	291	36,4%
5-9	37 765	5,9%	2334	23,5%	193	24,1%
10-19	17 312	2,7%	1070	10,8%	117	14,6%
20-49	8 690	1,3%	732	7,4%	116	14,5%
50-249	4 578	0,7%	477	4,8%	83	10,4%
Total	643 821	100,0%	9 946	100,0%	800	100,0%

*Based on the HSO data, http://www.ksh.hu/docs/hun/xstadat/xstadat_eves/i_qpg001.html

After an initial telephone call for approval, a face-to-face interview was carried out with one of the SME owners who were part of the top management in the case when the firm had less than 20 employees, and one of the top executives – not necessary having ownership in the business - in the case of larger firms.

The histogram of the calculated competitiveness points of the 800 businesses with 4.36 mean and 1,12 standard deviations can be seen in Figure 2.

Figure 2 The histogram of the competitiveness points of the sample businesses



The distribution of the competitiveness points is close to normal distribution with 4,31 median and 0,21 skewness value.

The basic results and the application of the methodology: Cluster analysis and family business comparison

As a part of the general descriptive analysis, we present the correlation coefficients between the competitiveness points, the ten pillars of competitiveness – before penalization - and with two other factors that are profitability and values added factors. According to Table 3, all correlation coefficients but two are positive, as expected, however, not all of them are significant. Competitiveness points correlate significantly with all the ten pillars of competitiveness, ranging from 0,68 (Online presence and ICT) to 0,44 (Financing). Competitiveness is also positively correlated with profitability and value added, but only value added is significant. Profitability factor has the weakest correlation with all the other ten pillars of competitiveness; sometimes even the sign is negative.

Table 3: The correlation coefficients between the competitiveness point, the ten pillars, profitability and value added

	Categories	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Competitiveness point	1	0.640**	0.437**	0.678**	0.654**	0.717**	0.663**	0.557**	0.679**	0.659**	0.682**	0.085*	0.424**
2	Human capital		1	0.227**	0.424**	0.410**	0.436**	0.406**	0.292**	0.378**	0.419**	0.334**	-0.06	0.222**
3	Financing			1	0.225**	0.142**	0.340**	0.161**	0.121**	0.160**	0.228**	0.266**	0.00	0.197**
4	Networking				1	0.389**	0.587**	0.390**	0.301**	0.398**	0.411**	0.328**	0.088*	0.489**
5	Product					1	0.378**	0.494**	0.431**	0.506**	0.365**	0.358**	0.05	0.181**
6	Administrative routines						1	0.400**	0.289**	0.434**	0.434**	0.390**	0.097**	0.423**
7	Competitive strategy							1	0.348**	0.399**	0.459**	0.277**	0.04	0.232**
8	Technology								1	0.322**	0.344**	0.304**	0.120**	0.198**
9	Marketing									1	0.404**	0.430**	-0.01	0.132**
10	Internationalization										1	0.320**	0.06	0.391**
11	Online present and ICT											1	0.134**	0.271**
12	Profitability factor												1	0.123**
13	Value added													1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The calculation of the competitiveness points enables a ranking of firms' competitiveness. Since these points contain condensed and reduced information about the competitiveness of the individual business they only have a limited value. Therefore analysis should base upon all ten pillar values of the businesses. Moreover, the normalized values rather than the PFB adjusted values offer a more appropriate method for the analysis because they refer to the original values. In the following we provide two practically useful applications of the model and the results: (1) the dominant combinations of the pillars and (2) a comparison of the completely family owned businesses to the other firms.

In the following we analyze the basic competition strategies of the firms in terms of the ten pillars with cluster analysis technique. The combination of the pillars provides an inside view about the components of the dominant competitive strategies of the businesses. Table 4 reports the results.

Table 4 The cluster of the firms in terms of the ten pillars of competitiveness

Pillars	1	2	3	4	5	6	7	Average
Human capital	0.430	0.585	0.332	0.409	0.481	**0.604**	0.555	0.467
Financing	0.351	0.520	0.386	0.468	0.563	**0.571**	0.490	0.467
Networking	0.421	0.626	0.295	0.431	0.469	**0.703**	0.483	0.467
Product	0.458	0.576	0.340	0.419	0.393	**0.645**	0.542	0.467
Administrative routines	0.379	0.627	0.297	0.419	0.501	**0.692**	0.523	0.467
Competitive strategy	0.553	0.620	0.269	0.349	0.400	**0.705**	0.555	0.467
Technology	0.436	0.575	0.375	0.443	0.420	**0.634**	0.478	0.467
Marketing	0.441	0.575	0.322	0.435	0.408	**0.633**	0.558	0.467
Internationalization	0.414	**0.667**	0.325	0.414	0.437	0.647	0.521	0.467
Online presence and ICT	0.238	0.337	0.170	0.678	0.286	**0.780**	0.719	0.467
Competitiveness point average	3.79	5.30	2.86	4.17	4.07	6.29	5.12	4.363
Competitiveness rank of clusters	6	2	7	4	5	1	3	
Number of cases	115	73	144	166	88	94	119	799
Percentage of cases	14.4%	9.1%	18.0%	20.8%	11.0%	11.8%	14.9%	

Bold: Highest pillar value
Italic: Lowest pillar value

According to Table 4, the Hungarian small business sector is rather heterogeneous. On a ten point scale, overall competition points of the seven clusters range from 2.86 to 6.29 average from the lowest to the highest values. The individual competition points range from 1.6 to 7.50. Since the highest potential maximum is 10, even the best business reaches just only 75% of the potential competitiveness score.

Out of the seven clusters, the 94 cluster 6 firms perform the best: They rank first in all but one in the ten pillars: The exception is Internationalization where cluster 2 firms perform marginally better, on the average. While the performance over the ten pillars is well balanced cluster 6 firms relative weak point is the Financing pillar with 0.57 pillar value. At the same time, Online presence and ICT is the strongest pillar with 0.78 points.

Cluster 3 businesses, the largest group with 144 businesses, 21% of the sample, is at the bottom of competitiveness with a very low 2.86 points. This group seems to be the absolute losers in the competition race. They rank the last in each pillar but one that is Financing. The most critical point is the Online presence and ICT with 0.17 score: These firms seem to be out of the digital world in every respect. While their relatively best pillar is Technology with 0.37 scores on the average, these findings imply that these businesses should improve their businesses completely in every respect if they want to survive the competition race.

All the other five clusters are between these two extremes. The 72 cluster 2 firms are the second, based on the average competitiveness points. While their performance is well balanced they possess a weak point that is Online presence and ICT. It is interesting because these firms are the most active in internationalization. While cluster 7 businesses have a high average score in Online presence and ICT all the other pillar points are lower than 0.72. In particular, Technology is their most problematic pillar. A little bit below average performance characterizes cluster 4 businesses in almost all pillars where Online presence and ICT is the best and Competitive strategy is the worst pillar. They constitute the most numerous group with 166 businesses that is 21% of our sample. Interestingly, the best performing pillar is Financing in the case of cluster 5 firms however, they face problems in their Product and in particular in Online presence and ICT. Cluster 1 businesses perform well below average based on their 3.79 competitiveness points. They have very limited performance in Online presence and ICT while their best score in Competitive strategy is barely over 0.55.

A frequent investigation in the small business sector is to compare family businesses with other firms. Here we cut the sample into two parts according to the family ownership share. In the first sub-sample we assigned 546 firms that are fully (100%) owned by families. The other sub-sample, about 25% of the full sample contains 178 firms where family ownership is less than 100%.

Table 5 demonstrates the differences between the fully family owned firms with the other businesses in terms of the ten pillars and the competitiveness points. In addition we report the differences in the performances based on the profitability and value added.

Table 5: The comparison of the fully family owned (100%) and other firms

Category	100% family	Less than 100% family	Difference	Difference (%)
Human capital	0,45	0,52	0,08	17,28%
Financing	0,45	0,50	0,04	9,46%
Networking	0,44	0,53	0,10	21,73%
Product	0,45	0,52	0,07	15,79%
Administrative routines	0,43	0,53	0,10	23,25%
Competitive strategy	0,44	0,52	0,08	18,10%
Technology	0,46	0,49	0,03	6,45%
Marketing	0,45	0,51	0,06	12,47%
Internationalization	0,44	0,52	0,09	19,69%
Online presence and ICT	0,43	0,54	0,10	23,51%
Competitiveness	4,14	4,85	0,71	17,11%
Profitability factor	2,02	1,97	-0,05	-2,68%
Value added	0,16	0,27	0,11	64,99%
Number	546	178		

Maybe it is a surprise but fully family owned businesses are below to the other type of businesses in all respect but profitability where they perform marginally better than not fully family owned firms. According to Table 5, the differences with more than 20% (red letters) are the highest in Networking, Administrative routines and Online presence and ICT. It implies that the fully family owned firms have a tendency to collaborate, introduce administrative routines and go on the website less than the other firms. Internationalization is another pillar where fully family owned firms seems to have much lower scores. The difference between these two types of firms is below 10% in Financing and in Technology. Viewing the performance factors, Family businesses seems to be marginally more profitable however, based on a more complex value added factor their performance is almost two-third less than the other businesses.

Summary

In this paper we presented a potential way to examine the competitiveness of small businesses. Since most firm level competitiveness models aim to investigate large, mainly

multinational firms, we created a new conceptual model that fit better to small business setup. The conceptual model contains 56 individual variables and ten pillars. The RBV and Dennis Miller's configuration theory served as a basis to construct the ten pillar model of competitiveness. This is a major improvement as compared to to Szerb and Ulbert (2011) that included only 21 variables and seven pillars. The calculation of the competition points is based on a unique methodology called the penalty for bottleneck. Bottlenecks are defined as the lowest value factor out of the seven pillars of competitiveness. Each pillar value is related to the weakest pillar, and penalized for differences. Moreover, we also applied the equalization of the pillar averages principle to equalize the marginal effects of improvement.

A stratified representative sample of 800 Hungarian businesses served as a basis of empirical investigation. According to the correlation points, the ten pillars of competitiveness correlate positively and significantly with one another implying that they constitute a system. The competitiveness points of the individual firms range from 1.60 to 7.50, implying the even the best firm is just reaches only 75% of the potential points. The average value is 4.36, about 44% of the maximum available value of 10.

The cluster analysis shows high differences amongst the seven groups of businesses in terms of competitiveness in the Hungarian SME sector. In addition, the clusters represent the dominant competitive strategies of the Hungarian SMEs. While the top group constitutes only 12% of the businesses around 18% of the ventures have an average of 2.86 competitiveness points that represent only 29% of the potential seven points. The performance of the clusters over the ten pillars of competitiveness is generally balanced, however, there are some weaknesses in each group.

The examination of the fully family owned and other businesses prevail the lower performance of family firms an all aspects of competitiveness. Sometimes the differences between these two types of businesses are over 20%.

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Appendix 1: The description of the variables applied in the SBCI

The applied variables of the ten pillars of competitiveness are the following:

- Human capital
    - The number and share of employees with higher education degree
    - The problems with employees
    - The share of employees participating in training
    - The sophistication of the incentive system,
    - The leader's entrepreneurial traits
    - The uniqueness of human capital
    - Buyer-seller relationship financial factor
- Financing
    - The application of financial analyses in the business l
    - Insolvency measure
    - Liquidity financial factor
    - Inventory, financial factor
- Networking
    - The number of economic cooperation
    - The reliance to outside help in business development
    - The time of networking as compared to the establishment of the firm
    - Uniqueness of buyer/seller relationship
    - Financial leverage, financial factor
- Product
    - The geographic scope of selling in Hungary
    - The expected growth of the target market in five years
    - Product innovation
    - Activities concerning the introduction of new or amended product
    - The share of new product in sales
    - The uniqueness of firm's product, quick response to change in demand and continuous innovation
    - Investment, financial factor

- Administrative routines
    - The application of the different sources of information
    - Information sharing
    - Consultation in decision making
    - Administrative routines, knowledge sharing
    - Environmental investment and quality assurance
    - Uniqueness of product management and quality assurance
    - Operational management, financial factor
- Competitive strategy
    - The direction of strategy (defensive, proactive)
    - Growth strategy based on the number of business units
    - The level of firm's competition in the market
    - The intensity of competition
    - The uniqueness of firm' proactive strategy
- Technology
    - The level of firm's technology in Hungary
    - The age of available technology used by the firm and technological innovation
    - The uniqueness of applied technology, possession of license or know-how
    - Innovativeness, financial factor
- Marketing,
    - The product
    - The pricing of the main product
    - Sophistication of distribution channels
    - Applied marketing- communication tools
    - Marketing innovation
    - The uniqueness of marketing methods
    - Marketing, financial factor
- Internationalization
    - The significance of foreign buyers
    - The share of export in sales

        - Language capabilities
        - The uniqueness of location
        - The level of indebtness
- Online presence and ICT
    - Webpage technical characteristics
    - Webpage offered services
    - Webpage content (double weight)
    - Application of ICT tools
    - Uniqueness of ICT tools