



Balancing European SME Managers' Training Contents: Perceived Importance & Training Needs

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Abstract

Background: Given the limited available time of in-service professionals, the balance between the perceived importance of the course content and training needs is essential for the acceptance and attractiveness of training courses aimed at them.

Objectives: The goal of the paper is to contribute to the development of entrepreneurship and business training programs for European SME managers.

Methods/Approach: In six European countries a survey focusing on SME managers' views on the importance of individual items from a list of potential course content items, and their training needs was carried out, and followed by an analysis using exploratory and multivariate techniques. It was aimed at identifying homogeneous groups of managers with common training needs and perceptions of content importance. **Results:** Homogeneous groups of managers who assign the same importance to certain competences and who have common training needs are identified. **Conclusions:** Results of our research could help training institutions to develop courses aimed at SME managers. The balancing approach proved to be an interesting method of combining conflicting requirements for the training course curriculum development.

Keywords: SME; managers; business; competences; curriculum development; exploratory multivariate techniques

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Introduction

Entrepreneurship and business competences of managers are crucial “ingredients” of well succeeded small and medium enterprises (SMEs). SME managers are confronted with an increasingly unstable, complex and changing economic context. They must know how to combine a set of key diversified competences to lead their companies on the road to survival and development. They must also adapt themselves to face a set of challenges, which they are not always well prepared to face (Dominguez et al., 2010). This panorama is reinforced in the context of troubled economies.

In this context, developing training programs for SME managers may be an important contribution in support of SME survival and development. The curriculum of such training programs could be developed based on the intrinsic importance of different competences for different industries. However, managers' available resources (time, schedule, budget, etc.) for training are limited, and they are not inexperienced beginners. They may have already attained adequate mastery on some of the most important competences, and hence feel that they do not require training in them. These perspectives may impact the attractiveness and interest of training programmes and courses, from the viewpoint of prospective trainees (SME managers). Therefore, the curriculum of training programmes and courses cannot be devised solely based on the relative importance of competences themselves. It is necessary to balance this importance with the actual training needs felt by managers.

Based on this premise, a survey was carried out in the scope of the VITA Project – “Virtual Learning for the successful management of SMEs” (Rodrigues, et al., 2009), with the participation of SME managers from six European countries, to find out which competences SME managers found most relevant and in which ones they required the most training. The survey was based on a list of 34 competences and abilities sourced from a varied set of documentation from official, training, and research sources, as described further ahead.

Using the survey results, we first ranked competences based on managers' expressed training needs. We then developed an analysis using exploratory and multivariate techniques, considering the competences identified by managers as most important. This resulted in the identification of homogeneous groups of managers characterized by common training needs. These may help training institutions in the development of targeted training programmes and courses, as well as supporting the establishment of priorities for their educational actions towards SME managers and be more effective in their partnership towards SMEs' competitiveness.

The balancing approach itself may be an interesting method of combining conflicting requirements (importance vs. needs) for training course curriculum development.

Background

In June 2008, the European Commission (EC) adopted the 'Small Business Act' for Europe, reflecting the EC political will to recognize the central role of SMEs in the EU economy (European Commission, 2008). SME creation has increased in recent years, mostly in the service sector (Audretsch et al., 2009), and their importance in national economies is significant: in the non-financial business economy, there are about 129.6 million SMEs, which represent 99.8 % of all businesses and 67.1 % of the non-financial business economy workforce (Schmiemann, 2008). Nevertheless, even though the contribution of SMEs to the economic growth has been widely recognized, their survival is highly dependent on two factors: external conditions, which are ever more adverse; and also, to a great extent, human capital and management behaviour (Aragón-Sánchez, Sánchez-Marín, 2005). In particular, shortage of qualified human resources has been identified as one of the most critical bottlenecks for SMEs (Lee, 2006) – an aspect which also applies to SME management. In order to tackle an ever more complex economy, SME managers must develop competences which lay beyond intuition (Sadler-Smith, 2004), through well-designed training programs. Yet, there seems to be a lack of specific training for heads of SMEs. Existing training tends to serve either start-ups or medium sized firms and is not designed according to the preferences of SME managers, who "exhibit activist and pragmatist learning styles, prefer learning by doing and favour problem-centred approaches that offer flexibility" (NJM European-Economic and Management Consultants, 2000, p. 3).

Given the nature and characteristics of SMEs, where the owner/manager has a dominant role and influence upon decision-making, their personal time for training is limited. And, as mentioned earlier, they are not beginners. Therefore, if one considers a generic set of SME management competences, it is likely that managers already possess some level of mastery over part of that competence set. Thus, organizations providing training should tailor as much as possible the curriculum towards actual needs of managers. This implies that curriculum contents should take into consideration not just generic sets of required SME management competences, but rather balance the importance of each competence with actual training needs as felt by managers, lest they find the curriculum uninspiring.

In a prior study conducted within the scope of the aforementioned VITA project (Dominguez et al., 2010; Velegrakis et al., 2009; Velegrakis et al., 2011), an answer to the question of which competences were more relevant for SME managers was provided. That study analysed various sources on SME manager competences such as recommendations from government organizations, training curricula, and research literature (Audretsch et al., 2009; Bucharest Chamber of Commerce, 2008; DIDA, 2009; HRAKK, 2009; Jeou-Shyan, et al., 2011; Klen, Pereira-Klen, Gesser, 2006; Miettinen, 2006; Pichler, 2007) and conducted interviews with representatives of business associations of the six European countries represented in the VITA project (Austria, Finland, Greece, Italy, Portugal, and Romania). It yielded a framework of SME managers competences, organized in four categories: 1-personal; 2-team management; 3-technical non-finance; and 4-business & finance. Personal are competences related to the manager's personality, which are vital in order to manage an enterprise effectively. Team management are competences that are needed in order to create and lead a team and make full use of each team member's capacities. Technical and non-finance are competences that help managers fulfil everyday tasks and functions in the enterprise. Finally, Business & finance are competences that allow managers to deal with the basic financial and

business tasks of the enterprise. In this context, the sense given to competence was the following: “aptitude, ability or set of theoretical or practical knowledge necessary to achieve a certain purpose” (Dominguez et al., 2010). Table 1 presents the elements of each category of the Framework. A detailed description of these competences is found in Velegrakis et al. (2011).

Table 1
SME managers' entrepreneurship competences

Category	Competence
Personal	Attitude towards uncertainty and risk Innovative spirit Fulfilment of tasks and goals Self-confidence Communication skills Ability to discover new opportunities Conceptual ability
Team management	Negotiation and decision-making Time management for own work and the team's work Communication to the team of clear expectations of performance Regular supply of feedback to the team on its performance Full use of the capacities and knowledge of the team Promote mutual confidence Develop autonomy of a group Raise awareness of collective responsibility Ability to build and lead a team (leadership spirit)
Technical non finance	Ability for project management Ability to create and provide strategic/tactical/operational plans Management of human resources from an organizational perspective (allocation/attribution of tasks) Management of other resources (non-human) Awareness of corporate social responsibility Knowledge of the administr./bureaucr. process for founding company Knowledge of the legal requirements for business Knowledge of the most important legal forms of business ownership Process analysis and change management
Business & Finance	Knowledge of general business conditions and functions Knowledge of what to think about when deciding whether to found a business or not Knowledge of foreign trade and international trade relations Distinguish the financial issues between different company sectors (manufacturing/services) Management of the different perform. functions within an enterprise Understanding of different forms of financing (self-financ., external) Basic sales-planning skills Knowledge of accountancy and taxes Ability to plan and control: direct costs, overhead costs, cost prices, gross and net sales price, and earnings/profits

Source: Velegrakis, et al., 2009; Velegrakis, et al., 2010 ; Velegrakis, et al., 2011

Methodology

As mentioned earlier, the survey aimed at identifying the SME managers' perspective on the importance and training needs regarding entrepreneurship and business competences, from a European perspective. The survey was based on the set of competences identified prior, as described in the background section above.

Subjects

The survey took place from July to September 2009. The subjects of this study were active general managers of SMEs in Europe, with a particular focus on the six countries represented in the VITA project in view of easier access to contacts.

Research instrument

Research instrument was formulated (see Appendix) to obtain feedback from SME managers. The questionnaire included SME managers' required entrepreneurship and business competences identified by Velegrakis et al. (2011). The proposed questionnaire was devised in English and translated into each country's national language. These native language questionnaires were pre-tested with a sample of twelve managers from SMEs of the participant countries (two per country), to validate its contents and readability, and get feedback to improve the questions in general – including on adequacy of translations. Minor issues were identified and the corresponding changes were made to the final questionnaire, which was then generated using an online survey tool. A briefing letter was then sent to prospective participant managers describing the scope and goals of the study, including a link to an Internet webpage which allowed the completion of the questionnaire online.

Sample

The survey was mailed to managers of a sample group of 240 companies from the universe of SME European companies in the countries which participated to the VITA project. In order to obtain a sample of respondents better able to represent the overall population, we included 40 companies from each participant country: Austria, Finland, Greece, Italy, Portugal, and Romania. The companies were identified according to their gross revenue and number of employees. Out of the 240 companies which were contacted, 154 valid responses were received, which corresponds to a rate of response of 64 per cent.

Competences ranking

For each of the 34 competences, managers were asked to rate the degree of importance (4 levels: 1 – Not important; 2 – Lower importance; 3 - Important; 4 - Essential) and the degree of their need for training on each (3 levels: 1 - I do not need training; 2 - I need an overview; 3 - I need training). Based on this importance ranking (Oliveira et al., 2012) the 23 highest score competences were selected as potential curriculum contents, and are listed in Table 2. A numeration was associated to each competence, relative to the order of appearance of the variables in Table 1, originating acronyms Q_n. For instance, Q₅ refers to the competence "Communication skills". The selected competences were organized into five categories: "Top" (competences which had high results both on importance and on expressed need for training), "Essential" and "Essential (secondary)" (competences that were highlighted in terms of importance, with varying emphasis), and "Training is needed" plus "Training is needed (secondary)" (competences that were highlighted in terms of need for training, with varying emphasis).

In subsequent tables and figures, competences may also be presented with an index following the "Q". This was used in the analysis process to differentiate ranking by importance (Q2) from ranking by need for training (Q3). So the same competence may be presented in figure as Q2_n or Q3_n. For instance,

competence Q_6, "Ability to discover new opportunities" may be referred to as both Q2_6 and Q3_6.

Table 2

Competences considered as the most important and necessary

Category	Competence
Top – Essential and training is needed	Q_5 - Communication skills Q_6 - Ability to discover new opportunities Q_8 - Negotiation and decision-making Q_9 - Time management for own work and the team's work Q_16 - Ability to build and lead a team (leadership spirit) Q_17 - Ability for project management Q_18 - Ability to create and provide strategic / tactical / operational plans Q_32 - Basic sales-planning skills Q_34 - Ability to plan and control: direct costs, overhead costs, cost prices, gross and net sales price, and earnings/profits
E – Essential	Q_1 - Attitude towards uncertainty and risk Q_2 - Innovative spirit Q_3 - Fulfilment of tasks and goals Q_4 - Self-confidence
ES – Essential (secondary)	Q_7 - Conceptual ability Q_10 - Communication to the team of clear expectations of performance Q_15 - Raise awareness of collective responsibility Awareness of corporate social responsibility
T – Training is needed	Q_23 - Knowledge of the legal requirements for business Q_25 - Process analysis and change management Q_28 - Knowledge of foreign trade and international trade relations Q_31 - Understanding of different forms of financing (self-financing, external financing) Q_33 - Knowledge of accountancy and taxes
TS – Training is needed (secondary)	Q_12 - Full use of the capacities and knowledge of the team Q_21 - Management of human resources from an organizational perspective (allocation/attribution of tasks)

Source: Authors' work

Demographic characteristics of the respondents

Table 3 shows the demographics of the respondents (managers) and their companies. According to Table 3, the majority of the managers' companies have less than ten employees and more than ten years of existence. In addition, approximately 58 % of the surveyed firms have business relations with other countries. Regarding the demographic characterization of the respondents' managers, the majority is male (70.1 %), in their forties, with higher education, and managing the current company for more than five years.

Table 3

Demographic characteristics of the respondent managers and respective firms

Companies characteristics	Number	%
Number of employees		
1 to 10	93	60.4
More than 10	61	39.6
Internationalization		
Yes	89	57.8
No	65	42.2
Company age		
1 to 5	30	19.5
6 to 10	41	26.6
11 to 20	48	31.2
More than 20	35	22.7
Managers' characteristics	Number	%
Gender		
Female	46	29.9
Male	108	70.1
Years as manager in the current company		
1 to 5	48	31.2
6 to 10	48	31.2
11 to 20	44	28.6
More than 20	14	9.0
Education		
High school	16	10.4
Bachelor's	30	19.5
Post-graduation	52	33.9
MBA	13	8.4
Master's	13	8.4
PhD	22	14.3
Other	5	3.2
No answer	3	1.9
Age		
Less than 36	47	30.5
36 to 45	78	50.7
More than 45	29	18.8

Source: Authors' work

Statistical methodologies

Competences by importance were recoded into 3 levels (1-Not important + Lower importance; 2-Important; 3-Essential) to use chi-square tests with theoretical assumptions validated. Hence, since this was different from the original 4-level ranking (Q2), we used acronym Q22 ("Q2, 2nd version") to identify the recoded competences.

For instance, Q22_1 denotes competence Q_1, "Attitude towards uncertainty and risk", in the second version of the importance ranking. Q3_1 denotes the same competence in the need for training ranking. For each set of the 23 competences by the degree of importance (the competences which managers see as most important), and by degree of training needed (the ones in which managers felt they needed more training), we carried out a hierarchical cluster analysis.

The Spearman correlation coefficient and the Kendall rank correlation coefficient were considered to compare variables (the variables in study are all ordinal). For aggregation criteria, we considered the single-linkage, the complete linkage, the average linkage (between-groups), the centroid method, and the median linkage (Sousa, 2000). We analysed the agreement between the obtained hierarchies for the different comparison measures and aggregation criterion.

In order to complement cluster analysis results to check for similarities between competences by importance and training need, we proceeded further with a Categorical Principal Component Analysis (CAT-PCA), in each set of chosen competences. A scatter plot was chosen for graphical outputs to represent in a two-dimensional space the similarity between competences (Carvalho, 2004).

To confirm the consistency of the groups of variables found by cluster analysis, independence chi-square tests were performed between all pairs of variables within each obtained group of competences. Independence chi-square tests were also performed to check for association of each competence with variables that characterized managers and type of enterprise, to identify homogeneous groups of competences characterized by common training needs. All the analyses were obtained using IBM SPSS Statistics 19.

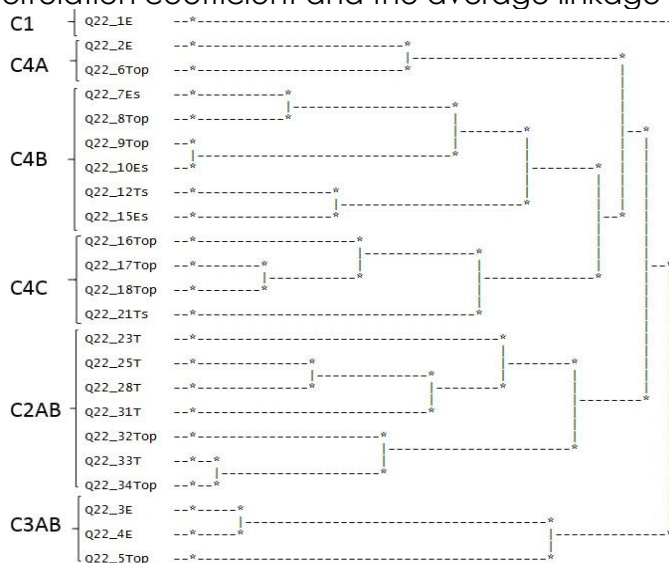
Results and discussion

A hierarchical cluster analysis was performed on the set of 23 variables for importance of competences. Considering the different combined options, measures to compare pairs of variables and aggregation criteria mentioned in the previous subsection, the obtained hierarchies presented great agreement, thus the choice of the "best hierarchy" process was simple.

Figure 1 presents the dendrogram obtained for clustering the set of competences seen as important for a SME manager, using the Kendall rank correlation coefficient to compare the variables and the average linkage method to compare classes. To choose the best partition, empirical procedures were combined with the calculation of appropriate measures, which led to the choice of a partition of the analysed variables in six classes described in Figure 1: {C1, C2AB, C3AB, C4A, C4B, C4C }.

Figure 1

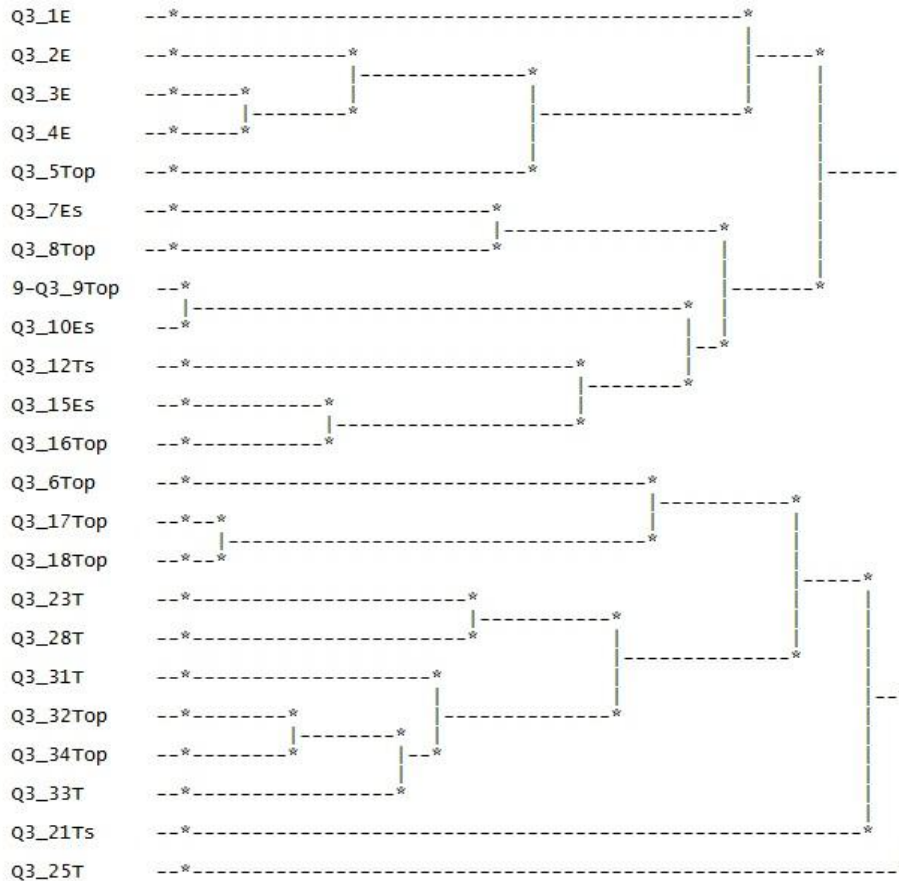
Dendrogram obtained clustering competences by importance with Kendall rank correlation coefficient and the average linkage method



Source: Authors' work

A similarly analysis to clustering the competences for the degree of training need was developed. Figure 2 presents the obtained dendrogram using Kendall rank correlation coefficient, to compare the variables, and the average linkage, to compare classes.

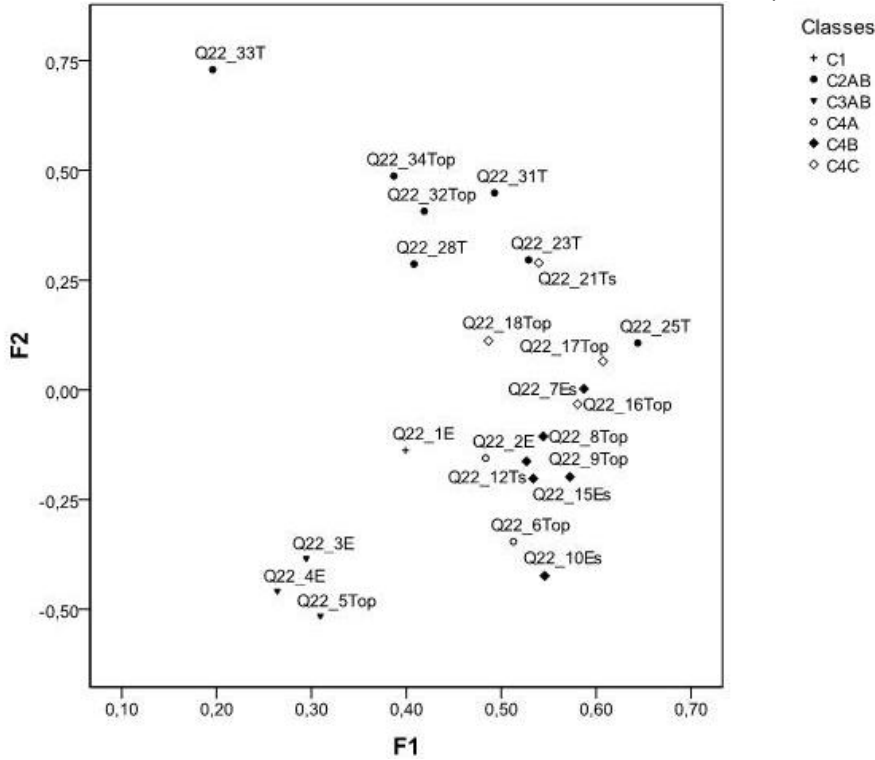
Figure 2
Dendrogram obtained clustering competences for the degree of training needed with Kendall Rank Correlation coefficient and the Average Linkage method



Source: Authors' work

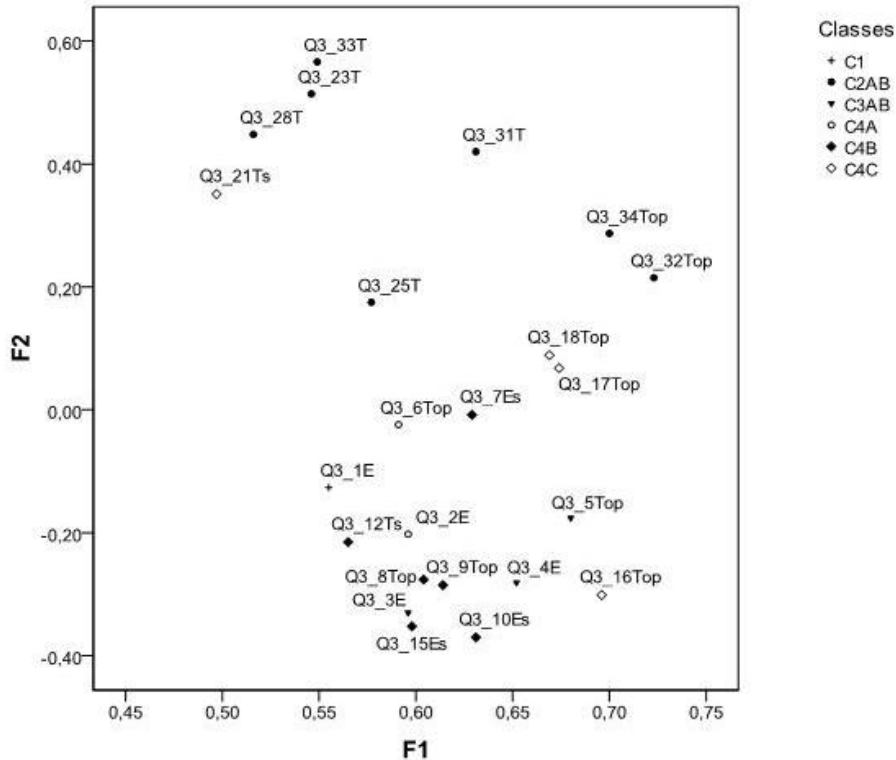
The Categorical Principal Component Analysis ordination resulted in two axes with retention of 34.53 % of the initial total variability with 23 variables (in the case of importance) and 46.96 % (in the case of need for training). The reliability of the axes was given by Cronbach's Alpha and shows values above 0.6 (0.55). Even with a retention of 34.53 %, it is clear that the competences are grouped visually according with the groups defined by cluster analysis. We present Figure 3, showing the scatterplot of competences by importance, and Figure 4, with the matching scatterplot by need for training. We labelled each competence by the class defined for the set of competences by importance.

Figure 3
 Categorical Principal Component Analysis Ordination Diagram for Loading Coefficients of each variable in the first two axes for competences by importance



Source: Authors' work

Figure 4
 Categorical Principal Component Analysis Ordination Diagram for Loading Coefficients of each variable in the first two axes for the degree of training needed



Source: Authors' work

Chi-square tests for independence were performed to evaluate the degree of association between all pairs of variables within each obtained set of competences, confirming the consistency of the sets' variables found by cluster analysis. The required theoretical assumptions were validated. Chi-square tests for independence were also performed to evaluate the degree of association between all pairs of variables and the manager and business characteristics in each obtained sets of competences, confirming the consistency of the sets' variables found by cluster analysis. The required theoretical assumptions were also validated.

Competences that have significant association (p value lower than 5 %) with variables that characterize the managers or type of business (such as age of the manager, the manager's experience, number of employees, sector of the company and business with other countries) are described in table 4.

Table 4

Association between competences and characteristics of the respondent managers and respective firms

	By Importance	By Need Training
Manager Age	Q22_4 Q22_25	
Manager Experience	Q22_2 Q22_6 Q22_15 Q22_17 Q22_19 Q22_21	Q3_5 Q3_6 Q3_7 Q3_8 Q3_9 Q3_11 Q3_18 Q3_31
Number of Employees	Q22_1 Q22_20 Q22_28	Q3_34
Business with Other Countries		Q3_30
Business Sector	Q22_25 Q22_32 Q22_31	Q3_28

Source: Authors' work

Figure 5 synthesizes the overall information of each competence by importance (right) and training need (left) where we used the average of all 154 answers divided by 4 for importance and divided by 3 by training need, respectively. The range of each row measures the importance and need of training from a global perspective.

So, for instance, if in a given competence all respondents answered with the highest score for both importance and need for training, its results would be 100 %: 4/4 and 3/3, respectively. Conversely, if for a given competence all respondents answered with the lowest score both for importance and need for training, its result would be 1/4 (25 %) and 1/3 (33 %), respectively. Each competence is labelled according with its kind (T for Technical and B for Behavioural) and according to the four categories (1-personal; 2-team management; 3-technical non-finance and 4-business & finance).

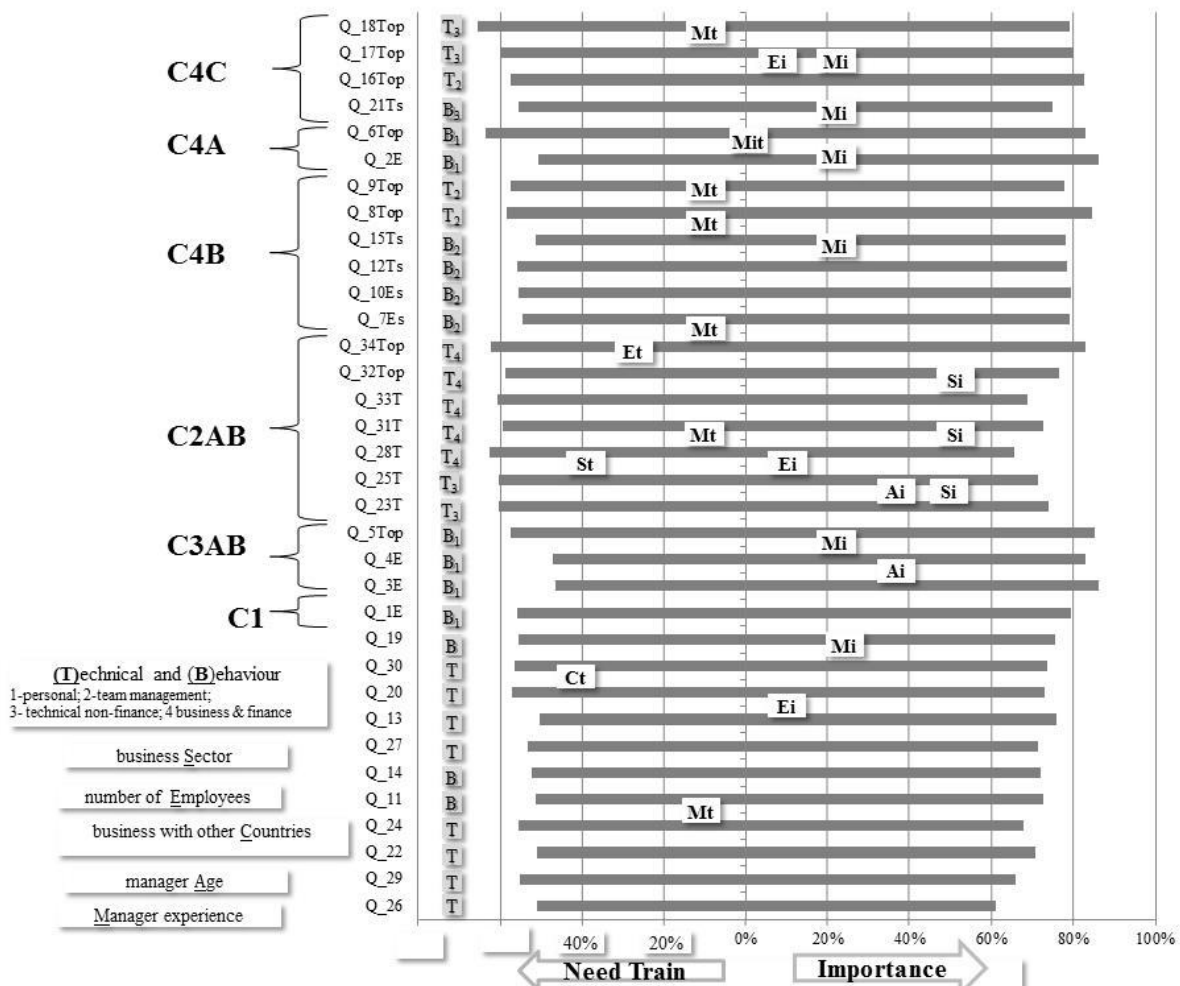
Also, whenever a management or business characteristics was found to have a significant association with a competence, it is identified by a capital letter, as described in the figure itself. The lower-case letter indicates whether that association is due to importance ("i"), need for training ("t"), or both ("it").

So, for instance, competence Q25 has approximately 60 % on “need for training” and 70 % on “Importance”, and is marked T3, meaning it is a Technical competence of the “technical non-finance” category. Further, it is also branded as "Ai" and "Si", meaning this result has a significant association with the managers' age and business sector, and in both cases that this association comes from managers' responses regarding the importance of the competence (indicated by “i”).

The groups of competences obtained by training need are very similar to the ones obtained for competence relevance by importance, although the interpretation of groups are in the opposite meaning since managers considered that they did not require training on important competences, and conversely.

Figure 5

Synthesis of the overall information of each competence by importance (right) and training need (left). The range of each row measures the importance and need of training from a global perspective



Source: Authors' work

Figure 5 supports the development of interpretations for the groups defined through our analysis. Upon reflection, we propose the following as a possible interpretation. For clarity, the groups of competences identified in the analysis are decoded in table 5.

Group C1 has a single competence: attitude towards uncertainty and risk. The C2AB group comprises mainly competences relating to commercial transactions, finance, and legal aspects. All competences are technical and for most of them this

result is related to the respondents' business sector and in some of them with the number of employees of the respondents' companies. Group C3AB refers to managers' behavioural competences, including communication, self-confidence, and the ability to accomplish tasks and goals. It included three competences, and in two of them there was a relation between the result on importance and the managers' age or experience. Group C4A comprises two behavioural competences of managers, related to the ability to identify opportunities and promote innovation in the enterprise, which are both associated with managers' experience regarding their importance, and – for one of the two – also regarding the need for training. This group is closely linked with group C4B, concerning the capacity for decision-making and team management. In this C4B group, the two top competences are technical and associated with managers' experience, in terms of need for training; all the others are behavioural competences. Finally, group C4C includes primarily technical project management capabilities and the ability to create strategic/tactical/operational plans, with most competences also related to the managers' experience, either via their importance or the need for training.

Table 5

Decoded competences grouped according to the analysis.

Cluster	Competences	
C1	Q_1	Attitude towards uncertainty and risk
C2AB	Q_23	Knowledge of the legal requirements for business
	Q_25	Process analysis and change management
	Q_28	Knowledge of foreign trade and international trade relations
	Q_31	Understanding of different forms of financing (self-financing, external financing)
	Q_32	Basic sales-planning skills
	Q_33	Knowledge of accountancy and taxes
	Q_34	Ability to plan and control: direct costs, overhead costs, cost prices, gross and net sales price, and earnings/profits
C3AB	Q_3	Fulfilment of tasks and goals
	Q_4	Self-confidence
	Q_5	Communication skills
C4A	Q_2	Innovative spirit
	Q_6	Ability to discover new opportunities
C4B	Q_7	Conceptual ability
	Q_8	Negotiation and decision-making
	Q_9	Time management for own work and the team's work
	Q_10	Communication to the team of clear expectations of performance
	Q_12	Full use of the capacities and knowledge of the team
	Q_15	Raise awareness of collective responsibility Awareness of corporate social responsibility
C4C	Q_16	Ability to build and lead a team (leadership spirit)
	Q_17	Ability for project management
	Q_18	Ability to create and provide strategic/tactical/operational plans
	Q_21	Management of human resources from an organizational perspective (allocation/attribution of tasks)

Source: Authors' work

What lessons can be learned from these results? The sequential application of the two data analysis methods, hierarchical cluster analysis and categorical principal component analysis, had a dual purpose: (i) confirmatory, by agreement of the most important conclusions, and (ii) complementarity, since each technique allows

detailing different aspects. Six clusters of competences were suggested, each cluster formed by competences seen as similar by SME managers. The consistency of these clusters was evaluated using adequate measures and hypothesis tests.

Conclusion

A training organization could elect to define a curriculum that includes all the competences deemed important. However, prospective trainees' will have limited resources and specific constraints (time, schedule, and budget, for instance). Hence, decisions must be taken on which content to include and which content to leave out, in order to reach a curriculum proposal that is both attractive to prospective trainees and aligned with the perceived importance of curriculum content alternatives.

The results presented herein bring to light relations between prospective trainees' views on curriculum contents importance and their willingness to receive training on them – in the specific case of SME management competences. The awareness of such relations may support training organizations in defining curricula for professional training courses aimed at current professionals. Courses for such a target group need to balance the perceived importance of curriculum contents with the fact that professionals may possess some level of mastery over some of them and differing interests on topics for training.

We do not mean to say that a specific training module should be created for each element within a group. That is but one syllabus organization possibility. But other possibilities exist. For instance, group C3AB identified Q_3 "Fulfilment of tasks and goals", Q_4 "Self-confidence", and Q_5 "Communication skills" as associated competences. These could either be separate training modules, part of a single training module, or found within other training modules covering other competences. What these groupings do is highlight that potential trainees (in this case, managers) that find Q_3 to be both important and useful as curriculum content will likely find likewise for Q_4 and Q_5, and vice-versa. Thus, a curriculum development manager may make more informed decisions by taking this into account.

Multivariate exploratory techniques were used to reveal these relations, based on surveys of the target training public, inquiring on both the importance of specific competences and the need for training in them. This approach may ultimately be usable for other kinds of professional training aimed at in-service professionals, and analysing this possibility is an interesting pathway of new research.

References

1. Aragón-Sánchez, A., Sánchez-Marín, G. (2005), "Strategic orientation, management characteristics, and performance: a study of Spanish SMEs", *Journal of Small Business Management*, Vol. 43, No. 3, pp. 287–308.
2. Audretsch, D. et al. (2009), "Annual Report on EU Small and Medium-sized Enterprises", available at: http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/files/supporting-documents/2008/annual-report_en.pdf (1 September 2012).
3. Bucharest Chamber of Commerce (2008). "Annual Report on the SME sector in Romania", Bucharest: Bucharest Chamber of Commerce Publications.
4. Carvalho, H. (2004). "Análise Multivariada de Dados Qualitativos", Lisboa: Ed. Sílabo.
5. DIDA (2009). "Description of the Italian entrepreneurs", Rome: DIDA Publications.

6. Dominguez, C. et al. (2010), "SME Managers' Most Important Entrepreneurship and Business Competences", In Varajão, J. E. Q. et al. (eds), Proceedings, Part II of ENTERprise Information Systems - International Conference, CENTERIS 2010, Viana do Castelo, Portugal, Springer-Verlag, Berlin, pp. 274-282.
7. European Commission (2008), "Think Small First - A Small Business Act for Europe" (Vol. {SEC(2008) 2101} {SEC(2008) 2102}), Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, European Commission Directorate-General for Enterprise, Office for Official Publications of the European Communities, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0394:FIN:EN:PDF> (1 September 2012).
8. Jeou-Shyan, H. et al. (2011), "Competency analysis of top managers in the Taiwanese hotel industry", International Journal of Hospitality Management, Vol. 30, No. 4, pp. 1044-1054.
9. HRAKK (2009). „Description of the main contents of the Finnish entrepreneurs“, Hyvinkaa: HRAKK Publications.
10. Klen, E., Pereira-Klen, A., Gesser, C. (2006), "Towards the sustainability of virtual organisation Management", available at: http://www.gsigma.ufsc.br/publications/files/2006_6Towards%20the%20Sustainability%20of%20Virtual%20Organization%20Management-GSCM-2006.pdf (1 September 2012).
11. Lee, K. W. (2006), "Effectiveness of government's occupational skills development strategies for small- and medium-scale enterprises: : A case study of Korea", Journal of Educational Development, Vol. 26, No.3, pp. 278-294.
12. Miettinen, A. (2006), "Finnish Survey on Collegiate Entrepreneurship 2006", available at: <http://www.guesssurvey.org/PDF/ISCE2006-FIN.pdf> (1 Sept 2012).
13. NJM European-Economic and Management Consultants (2000), "A Study and Analysis of Management Training Techniques for the Heads of SMEs, particularly Using the Information and Communication Technologies (ICTs)", available at: http://ec.europa.eu/enterprise/policies/sme/files/support_measures/training_education/doc/study_man-training2_en.pdf (1 September 2012).
14. Oliveira, I. et al. (2012), "Necessidades de formação dos gestores das PME: uma abordagem multivariada (Needs of training for SME manager's: a multivariate approach)", in Book of Abstracts of JOCLAD 2012, Tomar, pp. 62-65.
15. Pichler, J. (2007), "SME-Specific Profiles, Strategic Potentials and Attitudes toward Internationalization in the Enlarged EU", in Lulanski, P. et al., (eds), "Yearbook of World Economy", Sofia, pp. 103-122.
16. Rodrigues, C. et al. (2009), "Virtual Learning for the management of successful SMEs in Europe", in Morgado, L., Zagalo, N., Boa-Ventura, A. (eds) SLACTIONS 2009 International Conference - Life, imagination, and word using metaverse platforms, Vila Real, Portugal, pp. 165-170.
17. Sadler-Smith, E. (2004), "Cognitive style and the management of small and medium-sized enterprises", Organization Studies, Vol. 25, No.2, pp. 155-181.
18. Schmiemann, M. (2008), „Enterprises by size class - overview of SMEs in the EU“, available at: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-08-031/EN/KS-SF-08-031-EN.PDF (1 September 2012).
19. Sousa, F. (2000), "Novas Metodologias e Validação em Classificação Hierárquica Ascendente", PhD Thesis, University Nova of Lisboa, Portugal.
20. Velegrakis, G. et al. (2009), "Profile of the SME manager - Competences defining the profile of the European entrepreneur", Proceedings of the CENTERIS 2009 - Conference on ENTERprise Information Systems, Ofir, Portugal, pp. 725-726.

21. Velegrakis, G. et al. (2011) "SME Managers' Required Entrepreneurship and Business Competences", in Cruz-Cunha, M. M., Varajão J. (eds), E-Business Managerial Aspects, Solutions and Case Studies, Hershey, PA, USA: Business Science Reference, pp. 42-49.

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Appendix – Questionnaire

1. Company

1.1. How many employees have your company? Please choose only one of the following:

- 1 to 10
- 11 to 20
- 21 to 30
- 31 to 50
- More than 50
- Do not know/do not answer

1.2. Have your company business relations with other countries? Please choose only one of the following:

- Yes
- No

1.3. At how many years does your company started business? Please write your answer here:

2. Manager profile

2.1. Gender? Please choose only one of the following:

- Male
- Female

2.2. Age? Please choose only one of the following:

- 25 or less
- 11 to 20
- 26 to 30
- 31 to 35
- 36 to 40
- 41 to 45
- 46 to 50
- More than 50
- Do not know/do not answer

2.3 Academic education and/or professional formation? Please choose only one of the following:

- Primary school
- High school
- Bachelors
- Post-graduation
- MBA
- Master's
- PhD
- Other

2.4. At how many years are you manager of your business? Please write your answer here:

3. Management issues relevant for a SME manager

According to your experience, what management aspects do you consider relevant for the manager of an SME? For each of the following aspects, please select the answer that better reflects your opinion.

Competence	Not important	Little important	Important	Essential
Attitude towards uncertainty and risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Innovative spirit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fulfilment of tasks and goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to discover new opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conceptual ability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negotiation and decision-making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time management for own work and the team's work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication to the team of very clear expectations of performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Regular supply of feedback to the team on its performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Full use of the capacities and knowledge of the team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promote mutual confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop autonomy of a group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raise awareness of collective responsibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to build and lead a team (leadership spirit)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability for project management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to create and provide Strategic/tactical/operational plans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management of human resources from an organizational perspective (allocation/attribution of tasks)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management of other resources (non-human)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Awareness of corporate social responsibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of the administrative/bureaucratic process for founding a company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of the legal requirements for business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of the most important legal forms of business ownership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process analysis and change management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of general business conditions and functions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of what to think about when deciding whether to found a business or not	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of foreign trade and international trade relations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Distinguish the financial issues between different company sectors (manufacturing/services)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management of the different performance functions within an enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Understanding of different forms of financing (self-financing, external financing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Basic sales-planning skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of accountancy and taxes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to plan and control: direct costs, overhead costs, cost prices, gross and net sales price, and earnings/profits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Desired training

For each issue please select the training level you desire by choosing the answer that better reflects your opinion.

Competence	I do not need	I need an overview	I need training
Attitude towards uncertainty and risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Innovative spirit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fulfilment of tasks and goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to discover new opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conceptual ability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negotiation and decision-making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time management for own work and the team's work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication to the team of very clear expectations of performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Regular supply of feedback to the team on its performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Full use of the capacities and knowledge of the team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promote mutual confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop autonomy of a group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raise awareness of collective responsibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to build and lead a team (leadership spirit)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability for project management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to create and provide Strategic/tactical/oper. plans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management of human resources from an organizational perspective (allocation/attribution of tasks)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management of other resources (non-human)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Awareness of corporate social responsibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of the administrative/bureaucratic process for founding a company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of the legal requirements for business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of the most important legal forms of business ownership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process analysis and change management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of general business conditions and functions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of what to think about when deciding whether to found a business or not	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of foreign trade and international trade relations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Distinguish the financial issues between different company sectors (manufacturing/services)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management of the different performance functions within an enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Understanding of different forms of financing (self-financing, external financing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Basic sales-planning skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of accountancy and taxes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to plan and control: direct costs, overhead costs, cost prices, gross and net sales price, and earnings/profits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Other

5.1. Do you have any comments or suggestions regarding this questionnaire? Please write your answer here:

6. Further contacts

6.1. Name (of the respondent)? Please write your answer here:

6.2. E-mail (of the respondent)? Please write your answer here: