DIFFERENCES IN MANAGEMENT ACCOUNTING BETWEEN FAMILY ENTERPRISES AND NON-FAMILY ENTERPRISES A STATISTICAL APPROACH

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Abstract

Management accounting deals with the subject family enterprises rather little in spite of its high economical relevance. Based on the hypothesis that family enterprises aim at humane objectives to a greater extent and use controlling-instruments to a lesser extent than non-family enterprises the results of an empirical study for the region Upper-Austria are presented. The conclusion is that apart from the extent of the return on equity the objectives of the family enterprises do not differ much from those of the non-family enterprises. Contrariwise a high level of professionalization of employing controlling-instruments can be identified for family enterprises. The second point of interest is the search for differences between medium and large sized enterprises.

Moreover this paper demonstrates an application of (multiple) correspondence analysis in business research. Correspondence analysis is an explanatory data analytic technique and is used to identify systematic relations between categorical variables. It is related to the principal component analysis and the results provide information on the structure of categorical variables similar to the results given by a principal component analysis in case of continuous variables. Classical correspondence analysis is designed two-dimensional, whereas the multiple type of it is an extension to more than two variables.

After an introductory overview of the idea an example in this recent business research project is presented.

Keywords: Business administration, empirical research, correspondence analysis

Main Text

In spite of the high economical relevance management accounting deals with the subject family enterprises in empirical research rather little. Based on the hypothesis that family enterprises aim at humane objectives to a greater extent and use instruments of management accounting to a lesser extent than nonfamily enterprises, results of an empirical study for the region Upper Austria are presented. The conclusion is that apart from the extent of the return on equity the objectives of responding family enterprises do not differ much from those of non-family enterprises. Contrariwise a high level of professionalization of applied instruments of management accounting can be identified for family enterprises.

The research method is based on a standardized questionnaire, which was available via internet. All enterprises in Upper Austria with 50 or more employees (1180 enterprises) were invited to take part in the survey. The usable return was 236 enterprises or 20%, 189 of them declared themselves as family enterprises (80,1%) and 47 as non family enterprises (19,9%). Due to the fact that the proportion of family enterprises in Austria is about 70-80%, the sample can be treated as representative.

For verifying several hypotheses concerning management accounting classical statistical tests were used: Chi-squared-Test, Fisher Exact Test, Kolmogorov-Smirnov-Test, T-Test and Mann Whitney Test.

The main point for further discussions is how a family enterprise is defined. There are many different approaches to define it.

Some of the popular criterions are as following:

- Level of equity held by a single family
- Degree of implication of the family in the management structure
- More than 50% of ownership is held by a family
- A family group controls the business

In this survey the enterprises had to decide by themselves weather they are a family enterprise or not according to (at least one of the) following criteria:

- Arbitrary legal structure

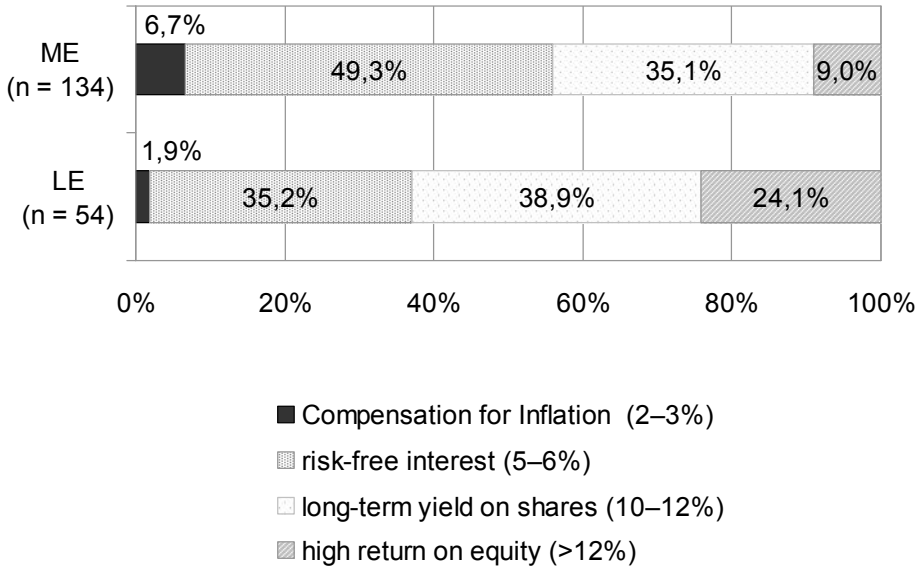
- More than 50% ownership is held by family members or family close foundations
- Family members are part of management
- Syndications of families or branches of families

It is generally accepted that family enterprises aim to achieve a combination of financial and nonfinancial goals. This research will check the following hypothesis:

- Family enterprises aim at humane objectives to a greater extent than nonfamily enterprises.
- Family enterprises aim at financial objectives to a lesser extent than nonfamily enterprises.
- Family enterprises demand a lesser return of equity than nonfamily enterprises.
- Family enterprises use instruments of management accounting to a lesser extent than nonfamily enterprises (strategic and operative).

Family enterprises are more often than not small enterprises, too. Therefore each of the above hypotheses was tested with respect to structure and size.

One of the results of the can be seen in the following figure:



	ME (50 - 249 empoyee)	LE (≥ 250 employee)
ROE ≤ 12%	91,0 %	75,9 %
ROE > 12%	9,0 %	24,1 %

n = 188 significant, p = 0,007

So there is a significant difference in the aspired return of equity (ROE) between medium-sized (ME) and large enterprises (LE) (and also between family and non family enterprises).

From this result the question arose, weather the structure (family or non family enterprises) or the size or any other criterion is the reason for the different aspired returns of equity. Are there some common factors, which can be extracted for explaining the different aspired returns?

For extracting common explanatory factors a final correspondence analysis was calculated, which is a principal component analysis for categorical data.

The starting point of a principal component analysis is the correlation matrix. The purpose is to create a model for data with fewer factors. The mathematical background for extracting factors is an eigenvalue

decomposition. For the complete solution the number of factors is equal to the number of variables, the optimal number of factors is decided with the screetest or the Kaiser criterion.

The starting point of a correspondence analysis is the matrix of standardized residuals. The purpose is the same as for the principal component analysis. The mathematical background for extracting factors is the singular value decomposition. For the complete solution the number of factors is again equal to the number of variables, the optimal number of factors is decided similar to the screetest or the Kaiser-criterion.

With the notation

P Correspondence matrix (relative frequencies p_{ij})

r Mass of rows (marginal frequencies c_i)

c Mass of columns (marginal frequencies r_j)

A Matrix of standardized residuals

$$a_{ij} = \left(p_{ij} - r_i c_j\right) \Big/ \sqrt{r_i c_j}$$

$A = U \Gamma V^T$ Singular value decomposition

U left singular vectors (columns), orthonormal

Γ singular values (descending), diagonal matrix

V right singular vectors (columns), orthonormal

the singular Value Decomposition gives

$$A^T A = V \Gamma \underbrace{U^T U}_{I} \Gamma V^T = V \Gamma^2 V^T \text{ and } A A^T = U \Gamma^2 U^T$$

and therefore we get the right singular vectors as eigenvectors of $A^T A$, the left singular vectors as eigenvectors of $A A^T$ and the squared singular values, which are the eigenvalues of $A^T A$ and $A A^T$. The squared singular values are also called principal inertias, and the proportion of the inertias to the total inertias gives the explained variance.

Similar to the principal component analysis the calculation gives the factors and the loadings for each variable on each factor. The result can be viewed in a plot, if two factors are extracted.

The input variables for the correspondence analysis were owner (family enterprise FU or non family enterprise NFU), branches of trade, number of employees, turnover, structure (shared or not shared) and aspired equity yield rate. Due to the fact that the sample size was rather slow, and the information about the branches was rather poor, the variable branches had to be cancelled.

The correspondence analysis extracted two factors, the first factor was mainly determined by size (number of employee), the second factor was less important and was mainly determined by size (turnover of enterprise). The structure (family business or non family business enterprise) was nearly completely determined by the first factor. So the most important variable for prediction of the aspired equity rate is the size of an enterprise expressed by the number of employee.

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