



PhD Program in Business Administration

**STRATEGIC ADAPTATION,  
AMBIDEXTERITY, AND  
COMPETITIVENESS**

**in Hungary between 1992 and 2010**

*PhD Thesis Work*

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# 1 INTRODUCTION TO THE INVESTIGATION OF STRATEGIC ADAPTATION

I couldn't have chosen a worse time for writing my PhD dissertation focusing on corporate strategy and environmental adaptation, because it is a time of a global financial and economic crisis, with an extremely sensible influence on Hungary. It is excruciating to investigate corporate strategy, since it is recession and the enterprises need to focus on survival.

I couldn't have chosen a better time for writing my PhD dissertation, because it is a time of a crisis and everyone is looking for a way out. It is indispensable to investigate environmental adaptation, since it is recession and the enterprises need to focus on survival hence good decisions worth even more. Reducing expenditures is not a solution for everything; revoking investments from long term growth opportunities will lead to bankruptcy after the crises.

This is not a paper about the crises, but I'd like to make the best of this opportunity and cross the borders of the frameworks of traditional management theories. Pettigrew (1985, 1987) pointed out, that higher level strategic and organisational changes are related to economic recession.

The dissertation is about strategic adaptation, ambidexterity and competitiveness of the firm from the point of view of the Configurational School of Strategic Management. My basic assumption is, that the winners, or survivors are the ones who determine the flow of history, therefore those organisations that are unable to adapt to the environmental changes, overperform their competitors, or grow, just slack, show the indications of crises (Angyal, 2003). Another reason why excellent performance in existing business is important is that in case of unfavourable changes in the environment, it provides a post to retreat to, or even a base for transformation. Exaggerated exploitation though comes at a price; it might lead to straining the business model, losing the organisational support, exploiting the market, losing the flexibility, and therefore the viability of the company as well. (Adizes, 1992) Therefore it is important for the sustainable competitiveness to explore new possibilities and to find the balance between the exploitation and exploration (ambidexterity).

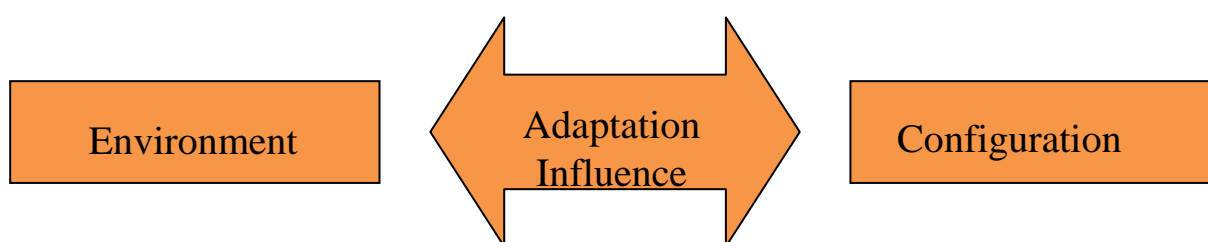
There are a lot of unanswered questions in connection with the strategy and performance: (1) Do the environmental conditions clearly define the right strategy and the corporate configurations' competitiveness? (2) How does the change of environmental conditions affect the strategy and performance? (3) Does the corporate configuration influence the environment?

The sub segments of classic management and organisational sciences have not been able to answer these questions on their own so far. Strategic management has reached its boundaries regarding these topics; there is excessive focus on the current performance and weak connection to the future. Entrepreneurship on its own is neither capable of answering the question, there is a strong focus on searching for opportunities while efficiency is kept back. However, with merging the two areas, new perspectives open up in entrepreneurial researches (Hills et al., 2001, Schendel and Hitt, 2007).

Those enterprises, that are unable to give up their earlier practices and routines when reacting to the changes of the environment, are likely to drop behind their successfully changing competitors in performance and in growth as well, and finally even drop out from the competition. That's why the question is not about whether change and adaptation are necessary, but rather how it is achievable to attain a better position through the configuration processes (Mintzberg et al., 1998). How can everything be kept, which was good in the previous configuration, and gain and exploit all, which appears as an opportunity in the new configuration and in the transformation itself?

According to my basic research model the enterprises adapt to the environment and create (viable) configurations, and through their adaptation strategies they try to influence their environment as well. (Figure 1.)

**FIGURE 1:** The Basic Research Model



In the rest of the introduction I will clarify the most important notions of my dissertation, like strategic adaptation, ambidexterity and competitiveness. Then I will confirm the *raison d'être* of this dissertation, and finally I will present its most important results.

## ***1.1 The conceptual framework for strategic adaptation, ambidexterity and competitiveness***

### **1.1.1 Strategic adaptation**

Adaptation is the answer of the companies to environmental challenges. Companies basically either recognise or don't recognise (in time) the environmental changes. In case they recognise them, they either find an appropriate adaptation form, configuration to them or don't. Moreover some companies are capable of influence their operating environment actively.

In the dissertation I use two interpretations of strategic as an attribute: on the one hand, it refers to strategic thinking, at which for example we can think about the will to overcome the competitors, on the other hand, it refers to strategic management, which incorporates the areas of planning (analysis and selection) – realization – monitoring – feedback (Balaton et al., 2007, Balaton et al., 2010). Nevertheless, I take Mintzberg's 5P (Mintzberg, 1994) as fundamental, which says that strategy can be a plan, a ploy, a pattern, a perspective or a position. During the dissertation, I put more emphasis on interpreting the pattern and the position aspects when examining corporate archetypes, configurations and adaptation strategies.

Among the strategic schools I use the frameworks of the configuration one, which says that strategy is nothing else, but the sum of the conversion processes. Within this framework, the dissertation follows the practice preferred by researchers, so it aims to describe the configurations formed by different environmental circumstances. On the other hand though, after carrying out the empirical research, it intends to draw useful results for practicing managers as well: how to lead changes.

### **1.1.2 Ambidexterity**

A company can be successful on its existing operational areas and can exploit them. In this case, the company achieved growth in quantitative terms: the sales, the number of employees and the available tools of the company increase. However growth can be a quality term; and the quality change is also needed for the maintenance or enhancement of a given level of performance. The most qualitative change indicates that not only the quantities change, but a progressive change takes place (Penrose, 1959: 1).

Lipitt and Schmitt (1967) emphasise that the company's position in the lifecycle is not determined by the organisational size, or the number of employees, or the market share, but it is rather determined by how the leaders face the various organisational crises.

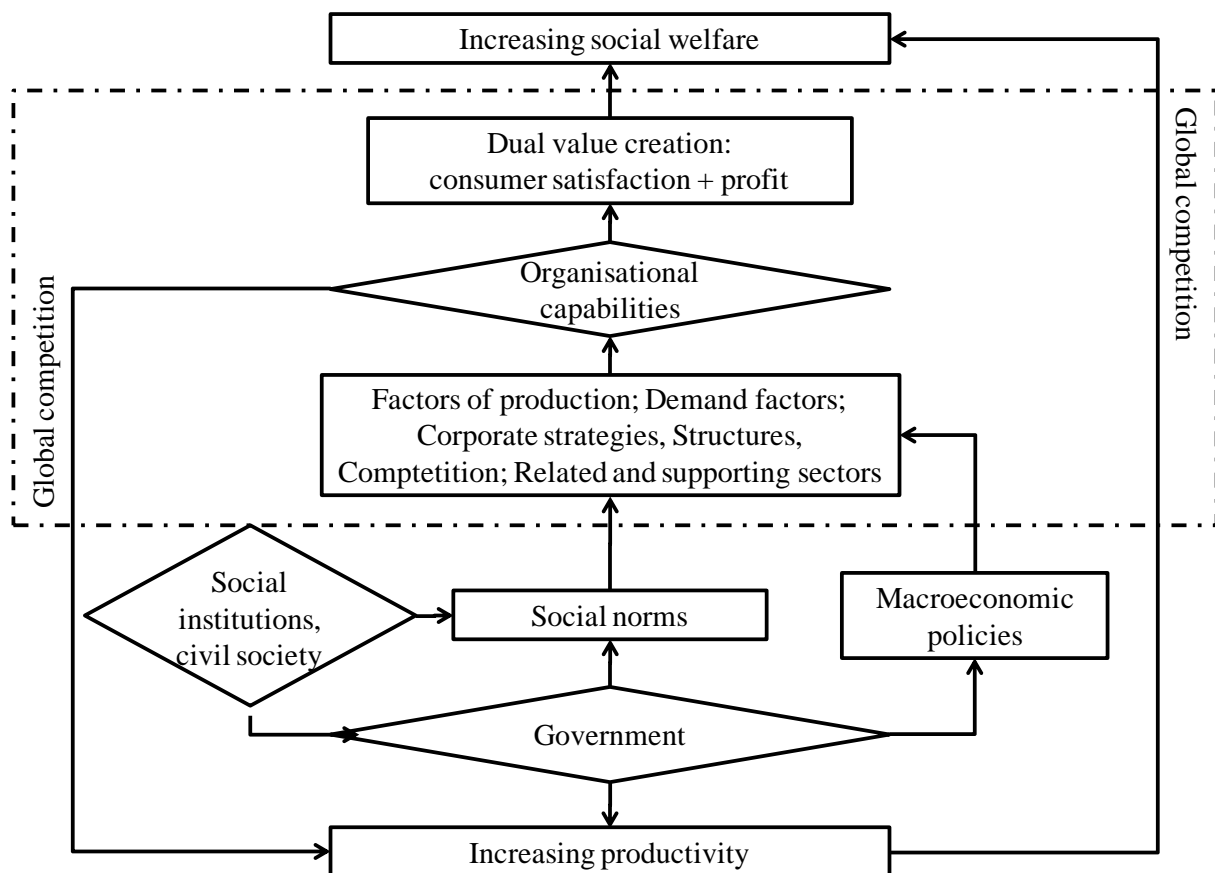
When solving crises the successful embracement of new possibilities has a key role without the destruction of the existing areas. Companies meet a lot of “creative destruction” (Schumpeter, 1980) ideas during their explorative activities; however the real challenge for them is not the pure implementation of these ideas, but the successful running and construction of the existing and new fields at the same time.

Summarizing the concept of ambidexterity, it ensures success for a company on its existing fields (exploiting) and on its new business fields (exploring) at the same time.

### 1.1.3 Competitiveness

The concept of competitiveness is defined by Chikán and Czakó (2009) in two major levels: macro and micro levels. The connections of the macro and micro approaches are shown by Figure 2.

**FIGURE 2:** The linkages of competitiveness in macro and micro level approaches



Source: Chikán and Czakó, 2009: 80

On macro level “the competitiveness of a national economy is that it can create, use and between the frames of the global competition sell products and services and this way the welfare of its citizens and the increment of its own production factor grows in a sustainable manner.’ (Chikán and Czakó, 2009: 77)

On micro level “the competitiveness of companies is that they offer products [goods and services and ‘solutions’ included both of them] to the consumers with the compliance of social norms, and the consumers are willing to pay a more profitable price to the company than to the competitors. This implies that the company should be able to adapt to the external and internal environmental changes, and get a better fit to the new regulations than the competitors.’ (Chikán and Czakó, 2009: 78)

The key element of the definition is the adaptation of the companies which is analysed by the “In competition with the World’ research program in 4 areas: (1) strategy, (2) leadership and decision-making, (3) value creation and (4) inter-company relations. In my dissertation I am focusing on the first dimension, namely the strategic adaptation.

## ***1.2 The justification of the dissertation and the most important results***

The research of the strategic adaptation and the configurations of the organisations are well established, although several research questions are still needed to be answered in the relations between the environment, strategy and performance: (1) Is the environment determines the strategy, and the competitiveness of the configurations? (2) How do the environmental changes influence the strategy and the performance of the organisation? and (3) Can the configuration of an organisation influence its environment?

Based on that literature review the question may rises in the reader whether is it possible to discover new element by examining this phenomenon any further? Is it still timely to develop the field? I believe that the answer is yes for both questions mainly because it is time to change:

- ✓ from static to dynamic approaches,
- ✓ from short term focus to longitudinal researches with extreme environmental situations,
- ✓ from the examination of bi-variant relations of firm characteristics in order to understand the complex configurations as a whole phenomenon,

- ✓ from US base researches to the research of emerging markets (like Hungary),
- ✓ from simple description of firm behaviour to theory development by hypotheses development and testing,
- ✓ from replicatory studies and principle component analysis to up-to-date research design and methodology (like multidimensional scaling).

Summarising it, in my dissertation I make an attempt to study thoroughly the strategic adaptation of the Hungarian companies between 1992 and 2010 with an up-to-date multivariate research design with the aim of providing answers to the above mentioned research questions. In particular, I examine the following elements in detail:

- ✓ the environmental changes and the sources of environmental uncertainty,
- ✓ the perception of environmental changes and the capability to influence the environment,
- ✓ the deliberative strategies followed by the organisations,
- ✓ the performance of the organisations compare to their main competitors, and from that the latent performance dimensions and configurations, and
- ✓ the relations between the above mentioned variables, hypotheses.

I believe that my research makes three main contributions for scholars, practitioners and policy makers. The main contributions of the the dissertation are the following:

- ✓ Examination of the strategic adaptation phenomeon on a relatively wide range of literature. Hypotheses were formulated on the basis of deductive methodology. The hypotheses were tested, 6 got approved, 2 got modified, and one got denied.
- ✓ Critical assessment of the literature and former research made on strategic adaptation led to the formulation of an up-to-date and integrated research design.
- ✓ Development of theory by providing answers to the main research questions: (1) In a given environment not only one, but more configurations are viable, (2) but in different environmental circumstances different configurations are dominant. Moreover (3) companies with larger financial, market and lobby power, and with higher organisational capabilities, network position and lower product orientation are more capable to influence their environment.



## **2 THEORETICAL FOUNDATION OF THE RESEARCH**

### ***2.1 The roots in strategic management***

#### **2.1.1 The Schools of Thought in strategic management and strategic adaptation**

Mintzberg et al. (1998) identified 10 schools of strategic management (10 Schools of Thought). They differentiate between two categories in this regard: the one is the prescriptive schools (the Design, the Planning, the Positioning and partially the Configurational school), which attempt to identify directions for action on the part of the corporate strategy based on an assessment of the company's current situation and that of the environment within which it operates. The second one is the descriptive schools, which simply attempt to understand the historical reasons why a given company is where it is at a particular point in time. As such, the descriptive schools (the Design, the Planning, the Positioning and partially the Configurational school) endeavour to describe the creation of the strategy as extensively as possible, and leave the decisions to the strategists.

In the forthcoming part a short introduction about the schools of strategic management will come based on the works of Mintzberg et al. (1998), Elfring and Volberda (1997), and Volberda and Elfring (2001). I will attempt to interpret each of them in terms of their relevance to adaptation. In the course of introducing adaptation I also present my own interpretation that incorporates my earlier published research results as well.

According to the Design School strategy is a result of a conscious, monitored, easily perspicuous, nevertheless merely formalized designing process. Strategy is unique; it covers the questions of what and how. The creation and the realization of the strategy differ in time, adaptation evolves through the evaluation, selection and realization processes of strategy.

In the case of the Planning school, unlike the previously described one, strategy creation is a strictly and fully regulated process. It's characterized by the SWOT and the portfolio matrix, in theory, the responsibility is in the hands of the top management, practically it is taken by the planning staff, who divides the strategic goals into actions. The adaptation strategy is formulated in the course of detailed calculations, and the path leading to the organisational goal is also planned.

At the Positioning School the aim of the strategy creation is to define the position of the company on the market. Based on a detailed analysis, the conscious formation of the goals comes to the front, while the way leading there is pushed into the background. The adaptation

strategy is formulated in the course of detailed calculations, and is related to the market positions, primarily on the level of the strategic groups. The representatives of the Positioning School have worked out a detailed methodology to identify the archetypes of strategic adaptation, which has been elaborated by the representatives of the configurational school.

Based on the Entrepreneurial School, strategy is the result of conscious and spontaneous vision-creation processes. Strategy is the vision of the leader, the organisation acts upon that. Strategy only builds partially on consciousness, rather on experience, experimental learning and intuition, which is accompanied by the personal commitment of the leader. The focus of the growth is either the vision or the mission of the company. The changes mostly occur in turnaround strategies. It is important to note that the representatives of the Entrepreneurial School presume that corporate leaders are not only able to accept the challenges of the environment, but to influence this environment under proactive behaviour as well. I also build on this fundamental assumption and I analyse it in details in my dissertation (the middle element of the research core model – Figure 1).

In the perception of the Cognitive School, strategy is created in the process of getting to know the environment exploring and handling strategy. This process is highly dependent on the personality of the leader and the already existing strategy is difficult to change. Therefore adaptation capability is either a natural characteristic of the strategist, or there is a need for a change in the strategist's profile.

The followers of the Learning School create their strategy as a result of a collective, constant learning process, based on the assumption, that the environment is complex and unpredictable. The task of the leadership is to foster the process (socialization, externalization, combination, internalization) of learning. Adaptation is an important issue of the Learning School, but not necessarily in a form that is measurable with (financial) performance indicators, rather through the ability of gaining, storing and recalling individual and organisational knowledge.

The Power School considers the creation of strategy as a bargaining process between the power forces, the different interest-groups of the company (shareholders and stakeholders). Persuasion, conviction, blackmail, obedience, coalition and confrontation each take a role in shaping the strategy. In the Power School, strategic adaptation can often be connected to the dominant coalition.

The Cultural School shows similarities with the Learning and Cognition Schools, but it puts the emphasis on the collective and cooperative processes. The signals coming from the environment are decoded by the whole community. Besides personality, organisational culture gets a prominent role in building a strategy. The stabilization of the organisational culture however, often triggers inertness and leads to stagnation. It is a great leadership challenge to 'regularly vivify' the organisation, that is to build such an organisational culture in which change is permanent.

The Environmental School is based on the assumption, that the enterprises are totally vulnerable to the environment. The strategy creation happens during a selection process and could be regarded as a reactive process. The task of the leader is to foster the adaptation. The positions remain the same as long as the environmental situation 'allows', therefore strategy is nothing else, but subsequently justified luck. In this interpretation good organisational performance is only a consequence of the favourable environmental circumstances.

The Configurational school approaches strategy formation as a process of transformation. On the one hand, strategy creation depends on the organisational configuration, on the other hand though, strategy is a transformational process aimed at altering the configurations. In this interpretation the task of the leadership is to find and lead the organisation into the – environmentally – appropriate configuration. During growth, life cycle stages can be identified, among which the evolution stages require quantitative changes, while the revolution stages require qualitative alterations.

As I previously wrote in point of Positioning School, the representatives of the school have worked out a detailed methodology for identifying the archetypes of strategic adaptation, which has been brought to perfection by the representatives of the configurational school. In the practical part of my dissertation I build upon this methodology and I discuss it in details in the methodological part.

Mintzberg et al. (2005: 407) argue for taking the strategic schools into consideration simultaneously when creating a strategy, because the schools on their own are not able to provide a complex picture of the observed phenomenon. The authors see the unification of the strategic schools in the Configurational school (2005: 407) which arranges the diversified literature.

Elfring and Volberda (1997) found the division of Mintzberg too fragmented, and since there are significant connections and similarities between the certain schools, they suggested a three-part division: (1) the Boundary School, (2) the Dynamic Capability School and the (3) Configurational School.

The Boundary School examines two main issues: (a) where can the boundaries of an organisation be drawn and (b) how should be managed across the divide with other firms? Regarding the last one, the trust between the participants and the analysis of the strategic alliances get a significant role. This school shows similarities with the Positioning, the Cognitive, the Cultural and the Power School of Thought of Mintzberg.

The main questions of the Dynamic Capability School are: (1) how and with whom do the companies compete, and (2) how do they sustain competitive advantage over time? Its special research results appear in the formation of modular products and organisational structure and in the proof for the competition generating effect of organisational learning. It shows coherency with the Design, the Entrepreneurial, the Learning and the Environmental School among the Schools of Thought Mintzberg.

The Configurational School concentrates on identifying the archetypes of organisations and strategies, and to understand the transition between the separate types. Its important areas are the researches about the enterprise life cycle stages, and driving incremental and quantum (radical) changes. Mintzberg et al. themselves pointed out, that this school has connection to almost all Schools of Thought, but the strongest relations stand with the Power, the Environmental, the Learning, the Cognitive and the Entrepreneurial School.

It is important to note, that I don't question the equity of the grouping of the Mintzberg schools, but during my research I would like to draw attention to its deficiency, namely, that it doesn't place strategic adaptation appropriately in the literature. In this chapter I gave a short review about the connection of the strategic schools and the picture formed about growth, and later on I intend to reveal even deeper connections with reference to the Configurational School.

### **2.1.2 Choosing between the strategic schools based on thematic fit and my previous research experiences**

Kieser (1995) in Organisation Studies and Scherer (2002) draws attention to the fact how important it is, that the researches determine on which school they would like to base their standpoint. Making the choice unambiguous helps the understanding and the possibility of giving constructive feedback as well.

I defined two aspects for choosing between the schools: (1) how suitable it is for examining the topic and (2) how much it is supported by my earlier knowledge and competence. According to the first aspect, the Configurational School has the most potential, because on the one hand it especially examines the question of strategic adaptation on the strategic archetypes, and through the configurations, and on the other hand, it manages the statements of the other schools jointly. In order to answer the second question it is worth reviewing my earlier publications relevant to this topic.

I've started my doctoral studies at the PhD Program in Business Administration at Corvinus University of Budapest under the supervision of Prof. Károly Balaton, in strategic management specialisation in 2005. At the same time, I have started to work at the Institute of Management under the leadership of Prof. Miklós Dobák. I have been involved in teaching various courses as well as in participating in scientific research projects led by Prof. Dobák and Prof. Balaton. Therefore it is beyond doubt that both had a significant influence on my PhD research. Both professors have inspired my continued devotion to the learning process, helped on the way of discovery, and provided early critiques on my work. Thank you for your sincere guidance and continued support in all ways.

Of course, long discussions with my colleagues at the Institute of Management also had great impact on my work. Among others (in alphabetical order) I owe acknowledgement to Ádám Angyal (general and crisis management), Gyula Bakacsi (organisational behaviour), Lilla Hortoványi (entrepreneurial management), Sándor Kovács (organisation studies) and Ernő Tari (strategic alliances).

In the past few years I have been involved in several major research projects, where I gained significant experience and managed to publish individually and with co-authors. The research projects with the greatest impact on my personal development were (going backwards in time):

- from 2010, ‘Knowledge based economy in Hungary’ TÁMOP-4.2.1.B- 09/1/KMR thematic research, research coordinator in ‘Innovation in the SME sector’ subproject, head of research: Prof. Károly Balaton
- from 2007, ‘Effective business strategies in different corporate life cycles’, OTKA thematic research, researcher: CUB Institute of Management, head of research: Prof. Miklós Dobák
- 2006-2008, ‘Regional role and innovation activity of Hungarian centred and governed enterprises in order to increase competitiveness’, OTKA thematic research, researcher: CUB Institute of Management, head of research: Prof. Károly Balaton
- from 2005, ‘In competition with the World’ research program, CUB Competitiveness Research Centre (CRC), researcher: CUB CRC, head of research: Prof. Attila Chikán
- 2004-2005, ‘Corporate learning and strategy formulation at SMEs’, researcher: SZE Department of Marketing and Management, head of research: Ilona Papp, PhD
- 2004, ‘Influencing factors in entrepreneurial activity and growth’, researcher: SZE Department of Finance and Accounting, head of research: Szilveszter Farkas, PhD, PTE Department of Business Economics and Accounting, head of research: László Szerb, PhD

Because of the limits of the dissertation I will not specify the results of each research, but I will build in the relevant parts of them in the theoretical and practical parts of my dissertation. Due to individual and common interest, I have had the privilege to carry out research in the framework of each and every schools of strategic management connecting the empirical results with other local and national findings:

- Design School and Planning School – Szabó and Hortoványi 2005, Szabó 2005a, 2006
- Positioning School – Szabó 2005b, Hortoványi and Szabó 2006b, Hortoványi et al. 2006, Szabó and Vida 2009
- Entrepreneurial School – Hortoványi and Szabó 2006a and c, 2007, 2008a, Szabó et al. 2009, Hortoványi et al. 2009, 2010
- Cognitive and Environmental School – Szabó 2008
- Learning and Cultural School – Hortoványi and Szabó 2006e
- Power School – Balaton et al. 2010
- Configurational School – Balaton et al. 2010, Szabó 2008, Hortoványi and Szabó 2006b and d, Szabó and Dobák 2009

Although my involvement as a researcher was dispersed, my interest turned gradually towards the in-depth study of Configurational School. Exploiting fortunate situation that my professional and my personal interest had met in the very same research focus, over time my enquiry became absorbed in this field. In the following I will introduce the basic ideas of the Configurational School and later on I will build my arguments on this foundation.

### **2.1.3 The Configurational School**

According to the starting point of the school, the strategy and the organisation form a stable configuration dependant on the context. With the change of the context, for example the growth or the crisis of the industry or the enterprise, various other (new) configurations can be regarded stable. There is a transition process between the different stability phases, which generate significant rise (Miller, 1985). The patterns of the configuration transformations are more or less regular; these can easily be demonstrated with life cycle models (cf. Greiner, 1972).

The task of strategic management is to drive changes during maintaining equilibrium and achieving stability. The process and the content (plan, ploy, pattern, perspective, position) of the appropriate adaptation strategy depends on the environment, hence each configuration can be right depending on the context.

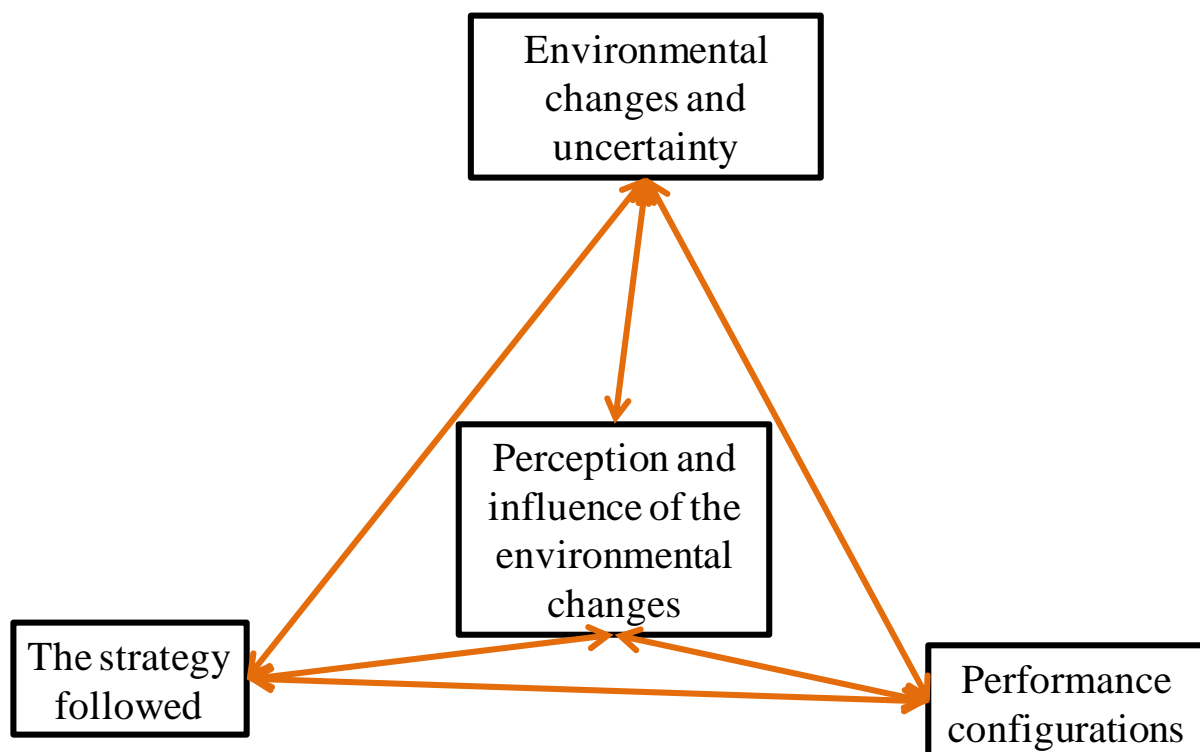
The Configurational School can be divided into two main areas. On the one hand it describes, that the strategies and the organisations adapt to the environment, and they take up a position according to that. On the other hand it assesses the successful alteration strategies between the transitions (Mintzberg et al., 2005: 328-377).

A good example for the examination of the Configurational School could be the appearance of a new product, technology or business model that could significantly alter the existing market structure or might bring new industries to life. These phenomena are worth examining on strategic level (Klepper and Graddy, 1990). Both the international (cf. Miles and Snow, 1978, Porter, 1993) and the Hungarian (cf. Antal-Mokos and Kovács, 1998, Antal-Mokos and Tóth, 2001, Hortoványi and Szabó, 2006b) strategic researchers have been concerned about the environmental adaptation and strategic behaviour of enterprises for a long time. I consider it important to specify the previously discussed basic research model, which shows the trinity of environment – adaptation – configuration (Figure 1), to be able to continue the analyses.

Under environment I mean environmental changes and the sources of environmental uncertainty. Under adaptation I mean the perception and the ability to influence environmental changes. I interpret configurations as strategy patterns, performance configurations and strategic archetypes.

At first in the dissertation I examine the changes of each factor between 1992 and 2010, and then I enlighten the linkages among these factors. The created research model based on the Configurational school is shown by Figure 3.

**FIGURE 3:** The research model based on the Configurational School



I go through hereunder the discussion of the theoretical part of the dissertation based on the elements of the research model on the order of (1) the environmental changes and uncertainty, (2) the perception and influence of environmental changes, (3) the strategies followed and (4) the performance configurations.

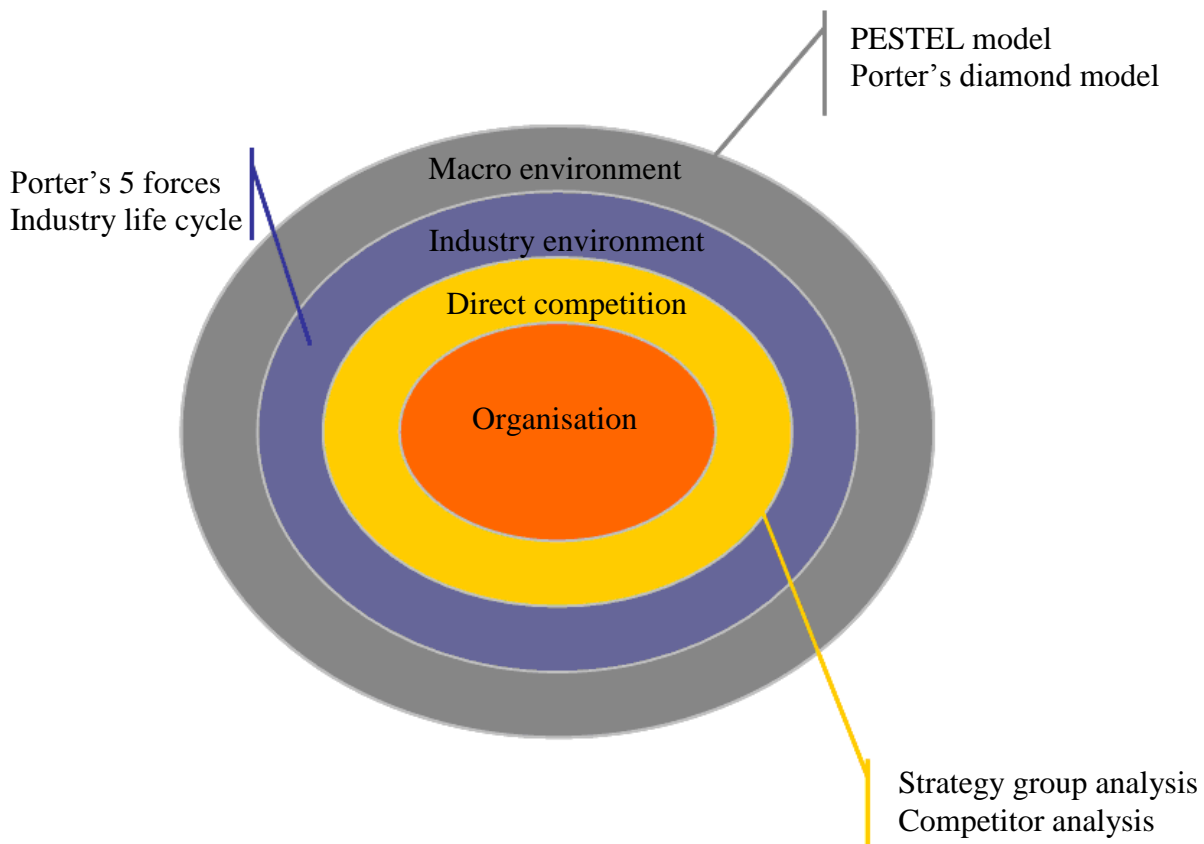


## 2.2 Environmental changes and uncertainty

### 2.2.1 The changing macro environment and the sources of uncertainty

Strategic management examines the external environment on three levels: macro environment, industrial environment and direct competition environment. The internal environment is determined by the resources and abilities. There are existing analyzing methods for each level which are demonstrated on Figure 4.

**FIGURE 4:** The levels of the external environment and related strategic tools



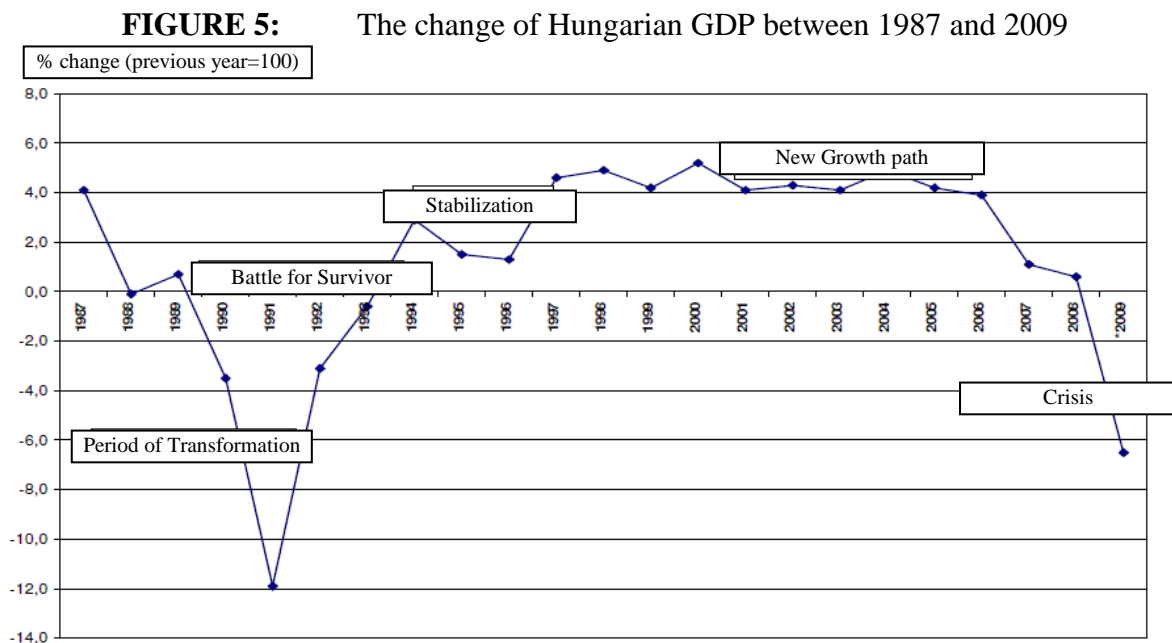
*Source: Balaton et al. (2007)*

The more proactive an enterprise is, the better it can cut itself adrift from the external environment. However a global crisis affects almost everything and generates a significant change in the structure of the industry as well. In the middle of the 1970's the global economy showed the sign of the large corporate structure not being the primary factor in facilitating development. Cornelius et al. (2006) suppose that two consecutive oil crises caused the increase of the role of the small enterprises.

Several large enterprises were strike by serious economic difficulties and unemployment became one of the main problems of the western societies. Besides that, the large corporations seemed to be more inflexible and slower during the adaptation to the new market conditions and in exploiting breakthrough innovations.

Carlsson (1992) found two major explanations why the researchers turned their attention towards smaller enterprises: on the one hand the change of the global economy (in connection with the strengthening of the global competition, the increase of uncertainty and the fragmentation of the markets), on the other hand the change of the characteristics of the technological processes. The global financial crises that burst out in 2008 and the demand crises following that drew the attention again to the macro environment and environmental adaptation in the significant industries.

The global crises didn't avoid Hungary either, moreover the researchers say that it even stroke Hungary harder because of its defencelessness (MKT, 2009). The effect of the crisis on the GDP is shown on Figure 5.

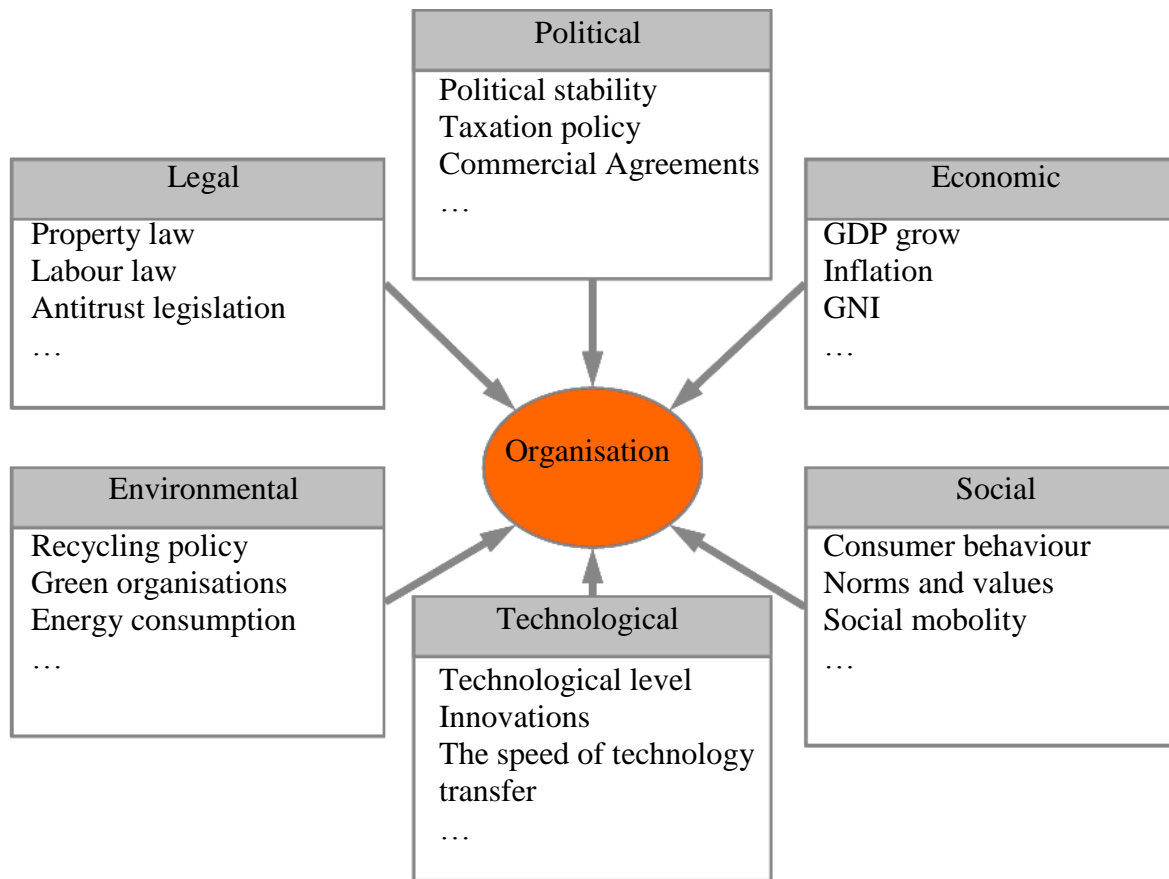


*Source: data of the national accounts (KSH) and quoted the prognosis of the Hungarian National Bank (MKT, 2009)*

Hungarian enterprises had time to prepare for the economic crisis because –as Szabó and Zetkó (2005) have found – the local economy follows the economic cycles of the USA with a delay from of half to one year.

The preparation for the changes of the external environment is well supported by strategic planning methods, like the PESTEL analysis. The main factors of the method are demonstrated on Figure 6.

**FIGURE 6:** The dimensions of the macro environmental analysis – PESTEL



*Source: Balaton et al. (2007)*

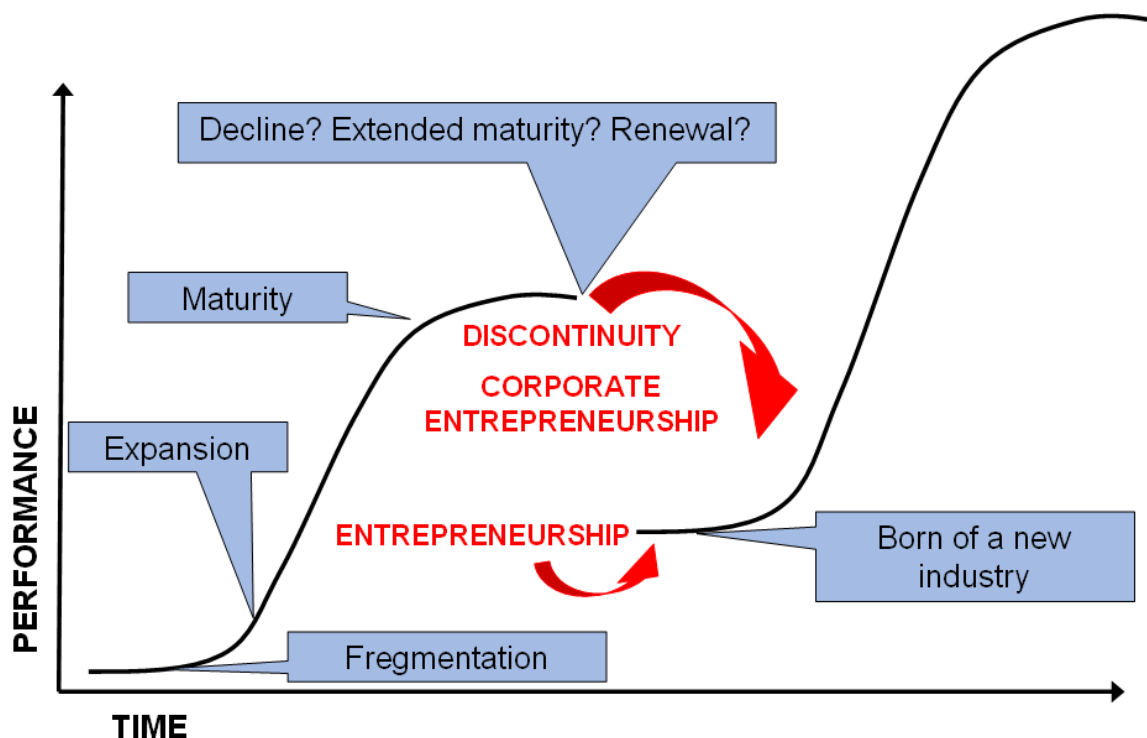
The ones emphasising the role of the external environment think that the other researchers pay too much attention on the individual characteristics, personality of the entrepreneurs and they don't put enough emphasis on the external structural opportunities and pressures. Byers et al. (1997) for example criticized the studies about entrepreneurship because their authors often praised highly the founders and top managers, if the business proved to be successful. Several studies dealing with the establishment and early stage of the innovative organisations showed tight connection with the environmental conditions and the evolvement of the new organisation (cf. Kimberly, 1979).

Moreover referring to those discussed previously at the Environmental School, every company is fully vulnerable to their environment and hence above-average corporate performance is only the consequent of favourable environmental conditions and the proper adaptation to them.

### 2.2.2 Changes and uncertainty derived from industrial and organisational growth

The examination of the industrial life cycle aroused the attention of several scientists (cf. Klepper and Graddy, 1990, Gort and Klepper, 1982). Richard N. Foster's (1986) publication was the first where the adapted version of the life cycle appeared: "the S curve of the industrial life cycle" in which the industries dynamically change similarly to the products. The four stages (Figure 7): (1) the initiative attempts, (2) boom and consolidation, (3) maturity and (4) obsolescence and decline.

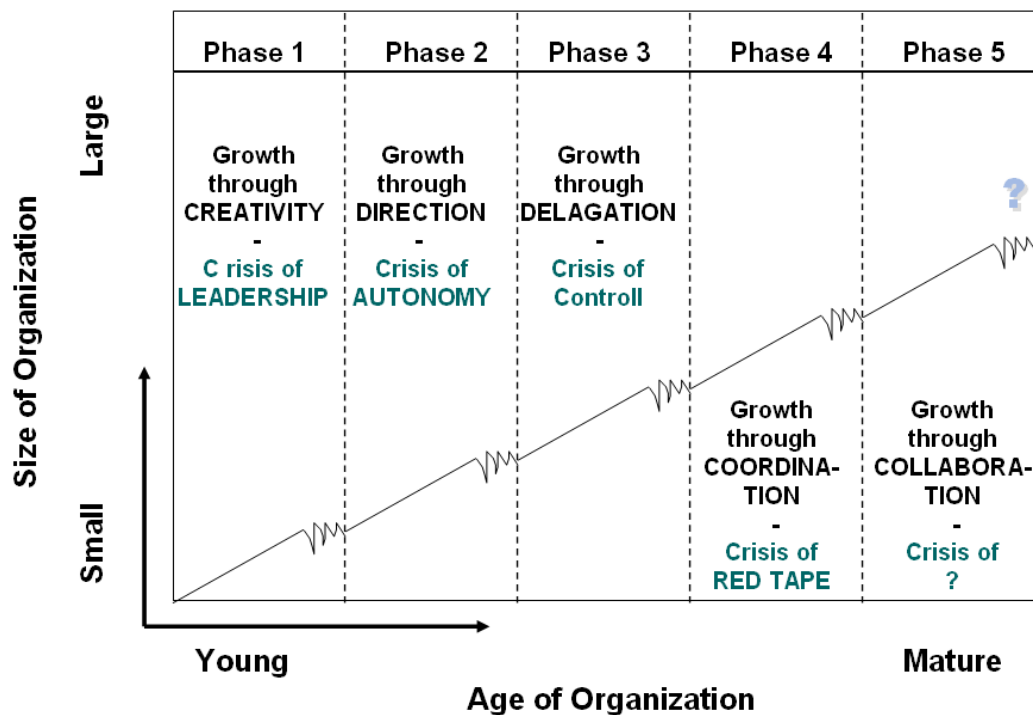
**FIGURE 7:** Industrial life cycle model



*Source: personal edition based on Foster (1986) and Davidsson (2004)*

Several researchers dealt narrowly with the issue of corporate growth, one of the most popular ones is the classical model of Larry E. Greiner (1972 and 1998) which stood the test of time. Greiner stated that the enterprises usually go through the same development phases during their growth. Moreover, each phase can be divided into two parts: the lingering evolutionary start phase, which after reaching a critical mass turns into a revolutionary phase (Figure 8).

**FIGURE 8:** Organisational growth phases



*Source: personal edition based on Greiner (1998)*

While the evolutionary phase is characterized by stable and balanced growth, the revolutionary phase that replaces the previous one is characterized by chaos, uncertainty and changes. Calm days and stable growth don't mean that the company doesn't have to take an effort to maintain growth. According to Greiner the word evolution 'describes' best that the company is in constant growth, although growth stands for small scale development, incremental changes. The gradual growth is interrupted with rebellions in all cases: the earlier management practices become inadequate. The transformation pressure ripples across the whole company: the organisation has to go through a change covering almost everything.

Those enterprises that are unable to give up their earlier practices and routines are likely to drop behind their successfully changing competitors in performance and in growth as well and finally even drop out from the competition. The growth phases are demonstrated on Figure 8.

Greiner modelled the career of the enterprises depending on two factors, the age of the enterprises and their number of employees. Time is not the only determining factor of the structure for him: those enterprises whose size doesn't grow can keep their leadership characteristics, governing and organisational tools on the long term without crises. The summary of the statements of Greiner is the following:

- Growing organisations go through typical phases, which have unique characteristics, systems and leadership.
- Calm and critical periods follow each other during the career of the company. Each life-cycle stage starts with a balanced evolutionary phase and ends with a revolutionary phase full of changes concerning the significant characteristics of the organisation.
- The management of the revolutionary phase determines the further development of the organisation: if the leader can change and cancel the malfunctioning practices of the past and introduce palatial leadership and organisational alterations, the company steps into the next stage, development phase, if he can't, the performance of the company presumably decreases, it gets into crises and with time it either ends or gets acquisitioned.
- The ones solving change successfully arrive into a calmer evolutionary phase again.

The findings of Burgelman (1991) partially contradict the statements of Greiner, saying that the more complex a company the more complicated the creation, understanding and the acceptance of strategy and the assurance of internal coherence are. Examining from Greiner's aspect, realizing the growth strategy and effectively defeating the obstacles of growth are not possible if the complexity of the organisational structure is not in correspondence with the growth phase of the company. It is the configuration of the organisational structure corresponding the maturity level that ensures the accomplishment of the strategy.

As it is demonstrated on Figure 8, the critical task for the leaders in the revolutionary phases is to find those new methods that create the next evolutionary phase. Paradoxically the emerge of the next revolutionary phase is the result of the changes carried out to answer the challenges of the earlier revolutionary phase – for example choosing delegation indicates the control crisis. Development crises thus can be predicted.

This statement is extremely important from the aspects of leadership and strategy because the critical periods are predictable and repetitive so leadership can prepare for the problems and take steps for prevention. In this way the revolutionary phases can probably be prevented or at least shortened.

The growth phases have a strong connection with the external environment of the company: the evolutionary phases are relatively shorter in rapidly growing industries, while they are much longer in the mature or more slowly growing industries. Merging this line of thoughts with the ideas of Balaton (2005a) we can assign shorter phases to the transformation and emerging markets as well.

Péter Szirmai (2002b) mentions three levels of the observation of the development phases: the macro level (bird's eye view), where the development phases are defined on the analogy of human age (infancy, youth, maturity, old-age), the mezzo level, which he calls the researcher level and defines as the researcher description of the development career of the company, and finally the micro level, where various phases follow each other at the certain companies. Szirmai states, that the interesting question during the examination of the development career is how to lengthen, higher or moderate decline or what interventions might help in avoiding the radical turns.

This question is also examined by the entrepreneurial management and corporate entrepreneurship theories, where the study of the constant renewing ability of the company is significant (cf. Barringer and Bluedorn, 1999, Burgelman, 1984, 1983a and b). Entrepreneurship and corporate entrepreneurship are such behaviours, or corporate behaviours that generally appear in looking for new opportunities and revealing new advantages.

Building on the ideas of Herbert Simon as well, entrepreneurial orientation comes to the front at the birth and maturity phase of the enterprises, because the establishment of a new enterprise means the introduction of a new economic activity, which generates change in the industry (Davidsson, 2004). Entrepreneurship thus generates radical changes – as Davidsson emphasises – “leads the market processes”. So entrepreneurial growth is not a quantitative change, but such a new supply that results in a quantum leap, that's why it is typical at the initial attempts that generate the formation of an industry and at the renewal of mature industries (Figure 7).

In the theoretical and empirical part of my dissertation I examine the following elements of environmental changes and uncertainty of their own and according to their temporal evolution and connections to the other variables.

- Macroenvironment
  - growth of macroeconomy (MKT, 2009)
  - foreign sales market environment (variable)
  - domestic sales market environment (variable)
  - changes in capital and financial market (variable)
  - foreign suppliers (variable)
  - domestic suppliers (variable)
  - technological development (variable)
  - legislation (variable)
  - social changes (variable)
  - domestic political changes (variable)
- Industry (companies main activity: control / descriptor variable)
- Direct competition environment (the variables, which serve to identify the configurations, consist an evaluation of direct competitor's performance)

In the next phase I turn to demonstrate the perception and influence of environmental changes and the methods of environmental adaptation.

### ***2.3 Perception and influence of environmental changes***

Steady changes characterize the environment of the organisations, and the pace of these changes is more and more accelerated. Organisations, members of the organisation in an industry have to accommodate themselves to the steadily moving, uncertain environment, which means bigger and bigger challenge and difficulty.

The environmental adaptation had been analysed only in one dimension by the early theories, later expanded the number of dimensions. The multi-dimensional solutions constitute various adaptation configurations. In the following these research directions are presented.



### **2.3.1 A single dimensional approach to the environmental adaptation**

Based on the contingency theory, a proper strategy, structure and behaviour can be found to the given situation, which results in maximum output (Dobák and Antal, 2009). Chandler (1962) pointed out that the environment of the firm determines the strategy, which is followed by the structure. Chandler supposed that there is a casual connection between the growth strategy and the managing structure of the enterprises: the structure follows the strategy.

The thesis of Chandler can be made perceptible as a linear sequence of the events: new strategy  $\Rightarrow$  beginning of managerial problems  $\Rightarrow$  decrease in economic performance (at least falling behind the possible)  $\Rightarrow$  developing the new structure  $\Rightarrow$  return to the suitably profitable level. (Antal-Mokos et al., 1997)

Burns and Stalker (1961) examined the environment of the enterprises and the organisational support of the innovation, and came to the conclusion that in static environment the mechanical structures, but in dynamic environment the organic structures are efficient.

Based on previous results Lawrence and Lorsch (1967) came to the conclusion that, the different subsystems of the organisation are exposed to different environmental effects, whose dynamics are also different. While the R&D faces typically dynamic, the production and the business operation face typically static environmental conditions, accordingly the efficient organisation structures of the certain functions are also different. So there can be both organic and mechanic organisational units in one organisation. The important task of the management is to coordinate efficiently the different systems.

Child (1972) changed the reactive picture about the environmental adaptation. He pointed out that not only the environment can have influence on the firm, but the enterprise can also influence its environment. The top managers of the firm, who has influence on the strategy and structure (dominant coalition) of the enterprise, have a chance to choose, and if the environmental conditions are soft enough even to maintain the strategy and structure that is advantageous for them.

In the dynamic world the international, macro, industrial and micro level changes bring continuously an effect on the enterprises. The firms can give answers for these challenges in different ways (Child, 1972, Dobák, 1997, Hortoványi and Szabó, 2006b):

- Isolation: The enterprise doesn't follow the environmental changes, it recognizes these late, and doesn't react on them consciously.
- Legging behind: The enterprise tries to recognize the major environmental changes, but often gives inadequate answers for these challenges.
- Late follower (reactive adaptation): The enterprise often recognizes the major environmental changes and follows typically a reactive strategy that responds to the environmental challenges afterwards
- Fast follower (preactive adaptation): The enterprise is usually able to forecast the major environmental changes, and follows a preceding, preparing on time behaviour.
- Trend setter (proactive influence): The enterprise is able to forecast the major environmental changes, prepares itself for those in time and adapts itself to them with proper responses; it even endeavours consciously to influence the environmental conditions.

The organisational inertia (the ambition of the organisations not to change their accepted behaviour without external constraint) is the characteristic of almost all organisations (Bakacsi, 1996). The endeavour to stability and security rise from the depth of the life of man. Because of the constraint from the changing environment only those dynamic organisations will be viable, which are able to prove their maintenance through steady adaptation.

We can consider instinctively that there is an order among the adaptation strategies and the bigger, more experienced enterprises with more resources endeavour to proactively influence, while starter companies have to follow the strategies of following or isolation.

But the adaptation strategy followed by the firm, ensues only partly from the possibilities of the enterprise (how big is the company, which experience does it possess, which resources are available for it etc.), on the other hand it is a result of a conscious selection. This last one can be explained by saying that every adaptation strategy has its advantages as well as disadvantages – however weird it may seem at first reading. I demonstrate some examples for the advantages and disadvantages of the single strategies in Table 1:

**TABLE 1:** The possible advantages, disadvantages of the adaptation strategies

	<b>Possible advantages</b>	<b>Potential disadvantages</b>
<b>Isolation</b>	Maintenance of stable operating conditions	Not following the changes can have deflation of the business content as a consequence.
<b>Legging behind</b>	‘The last become the first’	Legging behind can result in a lasting dependent relation
<b>Late follower</b>	The acceptance of developed technologies decreases the technological risks of those launching	The late follower can be often realized at lower profit rate
<b>Fast follower</b>	The imitator spares the costs and the risk of the experimental development (attacker’s advantage)	At entering the market it often is late for the skimming possibility
<b>Trend setter</b>	‘The first carries everything’ (first mover advantage)	Developments and the defender fights are costly and risky

*Source: Balaton et al. (2007)*

The complete isolation is a rare event in the business life, nevertheless those enterprises, who determine the trends are a small, often changing group of the organisations. The typical strategy is: some kind of following. The proactive strategy is very risky, the return of the invested time, money, and energy holds out promises with high profit rate, but the return and profitability isn’t proved at all. The followers step into a more stable, predictable environment, which is favourable to strategic planning, because the underlying inputs of the planning are more reliable (their volatility is smaller). The most important advantage of the imitators is that they avoid several risks, as well as their risk can be managed better.

### **2.3.2 Proactiveness as a characteristic of entrepreneurial behaviour**

Entrepreneurial activity means pursuit of opportunity irrespective to the level and nature of resources currently controlled (Stevenson, 1983) and as such, it is basically a change and growth oriented phenomenon.

Entrepreneurs are essential members of the society, but not because of their existence, but because they are able to create value for the enterprise and the society as well (Low and MacMillan, 1988: 142). The entrepreneurial activity supports the maintenance of the company’s competitiveness through value creation, therefore ‘it is critical for the long term viability of the economy’ (Stevenson, 1983: 3).

Entrepreneurial Orientation is an easily identifiable premise of the long term growth of the enterprise; it is a necessary but not sufficient premise of constant growth (Penrose, 1959: 7) Most of the entrepreneurs don't succeed in establishing a company that is self-supporting (Dess et al., 1997) or capable of potential growth (Vecsenyi, 2003, Ács et al. 2001, 2004).

I examine the concept of entrepreneurship along five factors, which show strong connection with the topic of strategic adaptation, ambidexterity and competitiveness: innovation, proactiveness, willingness to handle risk (Knight, 1921, Knight, 1967, Covin and Slevin, 1991, Miller and Friesen, 1983), autonomy and the aggressive competitive behaviour against the rivals (Lumpkin and Dess, 1996). These five factors determine entrepreneurial orientation. The last dimension has been criticized because it had been said that the content of competitive behaviour is completely the part of proactiveness. According to Hortoványi (2010) competitive aggressiveness is separate from proactiveness and the process of entrepreneurship is accompanied by definite growth objectives. In the followings I interpret the 5 dimensions in regard of the perception and influence of environmental changes.

### **Innovation**

In the interpretation of Schumpeter (1912, 1934, 1980) innovation is a significant element of entrepreneurship. Innovation refers to the creation of new products, services, processes, technologies and business models (Chikán, 2002). Knight (1967) interprets innovation as the ability of an enterprise to support creativity and experimenting in order to overcome the frequent consumer problems. Innovation is not only generating creative ideas, but placing them on new foundations and launching them on a new growth line.

### **Proactiveness**

Proactiveness refers to the deliberate action orientation, which materializes in activities that focus on future demands (Covin and Slevin, 1989, Lumpkin and Dess, 1996). Proactive companies are constantly looking for new opportunities; they are willing to be initiators in discovering and patronizing new value creating methods (Foss et al., 2006). Proactive leaders intend to influence the environment, define trends. Proactive leaders generally don't stick to conventions and they significantly build on their employee's creativity (Knight, 1967, Stevenson and Jarillo, 1990). The proactive behaviour of a company depends on the entrepreneurial orientation of the leader and the company and therefore it is independent of the external environmental conditions.

## **Risk-taking**

Taking risk refers to the willingness to use significant resources for exploiting such opportunities that include the risk of expensive failures. The risk and the potential profit or growth opportunities are proportional (Damodoran, 2007). Sandberg (1992) pointed out, that entrepreneurs prefer moderate risk taking, so thus they try to avoid both the low and the high risk situations. They avoid the first, because the easily attainable success usually doesn't have significant results, and the later, because its outcome is the question of luck, not the effort. Entrepreneur leaders endeavour to reach the division of the beforehand estimated risks (Hortoványi and Szabó, 2006a).

## **Autonomy**

Autonomy refers to the individual or collective independence in the realization of an idea or theory. Generally it means the ability and will to realize an opportunity. In order to encourage growth, managers have to provide significant autonomy to their employees on the lower levels of the hierarchy as well (Szabó, 2005a). Mostly the decentralized organisational structure and the consumer oriented, open culture are the ones, that enable the company to be up to the challenge set by the exploration and formation of the application areas of the new opportunities (Nyström, 1979, 1990).

## **Aggressive competition and growth orientation**

Bojár (2005) named the competitive spirit as the most important indicator of the commitment to establishing an enterprise or being an entrepreneur. In his research dealing with the types of entrepreneurs, Vesper (1980) realised that a lot of the leaders are not intended to expand their enterprises further than they think the controllable size is. Glueck (1980) came to the conclusion that it is important to make a conceptual differentiation between the entrepreneurial manager and the founder of a family business. Family businesses principally build their strategies according to the needs and preferences of the family. Glueck found that in case of a conflict the demands of the family come to the front against the demands of the business. Contrarily, the entrepreneurial manager decides to exploit the opportunity for the sake of the firm and stated growth objectives (Davidsson et al., 2002, 2006, Carland et al., 1984, 1988).

Based on our experiences, the moderate growth expectations are more common (Hortoványi and Szabó, 2006a, 2008a) which suit the observation, that the entrepreneurial managers are cautiously brave so they gradually test the realization possibility of the opportunities.

### **2.3.3 A multi dimensional approach to the environmental adaptation**

The organisations shape configurations as a combined effect of the external and internal environment, as a consequence of the strategic adaptation. The configuration can't be identified based on one factor; the common effects of more elements have to be considered. Galbraith and Nathanson (1979) pointed out the determining role of the environment in the necessity of the harmony between strategy and structure, and the importance of the power structure.

Mintzberg (1989) determined the configuration of the power and the structure in seven archetypes: (1) the entrepreneurial organisation, (2) the machine organisation, (3) the professional organisation, (4) the diversified organisation, (5) the adhocracy organisation, (6) the missionary organisation and (7) the political organisation.

The characteristics of the entrepreneurial organisation are the small team, the fast movement and the evasion of bureaucracy. The mechanical organisation supports typically mass-production. The characteristic of the professional organisation is that it doesn't have middle management, why its work isn't controllable. In the diversified organisation more units can be identified. In the adhocratic organisation the professionals govern, while the missionary organisation is kept together by common interests and beliefs. The political organisation exploits the absence of another organising principle and build on the conflicts so without external constraint it can be stable.

Every environment possesses limited resources, with 'given capacity' (Mintzberg et al., 1998: 292). When the industry begins to be 'saturated', the fight for resources excludes the less suitable organisations from the competition. The suitability criteria are determined by the environment. The consequences of several papers support the 'power of the environment' (e.g. Zahra, 1993, Miller and Friesen, 1983).

Evolutionary economy uses the model of natural selection in connection with the appearance, subsistence and rootedness of the variations in the economic population, emphasising the evolutionary dynamics of the processes, which influence the variety of the organisations (Singh and Lumsden, 1990).

The evolutionary economy incorporates four types of theories (Johnson and Van de Ven, 2002) which differ in the degree how much they allow (a) the individual organisations to change themselves (organisational inertia) and (b) to what extent the individuals are able to change their environment (environmental effect) (Table 2).

**TABLE 2:** Evolutionary theories

		Ability to change firm	
		High	Low
Ability to change environment	High	Industrial community theory	New institutional economics
	Low	Organisational evolution theory	Population ecology theory

*Source: Wickham, 2006: 135*

The classical research version of the strategy-structure relation is characterized by the method focusing on the forms of growth and pairing them up and putting them in cause-effect relations as strategy types with the organisational structures (contingence theory). At the common examination of the change ability of the internal and external environment, the types of organisational adaptation to the environment and the strategic types of adaptation come to the front instead of the growth strategies. In this stream the integrated types appear as the sum of the strategic and structural characteristics, formulated as a harmonic configuration of these characteristics (Antal-Mokos et al., 1997).

Miles and Snow (1978) created the model of the process of organisational adaptation. In this those alternative methods play a significant role that the organisations use to determine their product-market area and build up the mechanisms (structures and processes) that enables the realisation of this strategy. They primarily regard strategy as the method of adapting to the environment, which incorporates the operation range, the selection of product-market areas and the configuration of the organisation as well. Therefore we can observe integrated organisational types at the authors, which can be determined by the sum or configuration of the unique product-market strategies, organisational structures and process. Miles and Snow think that the successful types are the defenders, the prospectors and the analyzers, while the reactors are unsuccessful.

In the 1980's the emphasis on the soft structure of the organisation got stronger, which said that it is not the structure that accommodates to the somehow evolving strategy, but the structural and other organisational characteristics develop in a way that it's able to create and

realize the appropriate strategy. According to Peters and Waterman (1982) the success of the organisation depends on the extent to which they are able to manage the soft organisational factors. This way the primary success criterion is not the strategy, but the existence of such an organisation that is able to constantly adapt to the environment.

Peters (1984) finally got to the point where he said that strategy follows structure. According to his standpoint the organisations develop such differentiating abilities during their long term operation, in which they create a deeply rooted repertoire and based on that, the way of adaptation develops from the inside of the organisation derived from the behavioural norms of the management and the employees, the traditions of the organisation and the informal values. This opinion in essence shows similarities with Mintzberg's ideas, who interpreted strategy as the behavioural pattern appearing in the sequence of decisions and actions (Mintzberg, 1978, quoted by Antal-Mokos, 1997)

The adaptations are worth to be further examined from the aspect of the connections between strategy and innovation orientation, which is of significant importance regarding the definition and following of the trends. Nyström (1983) differentiated two extremes regarding the environmental adaptation and the innovation intention and ability: the innovative and the positional organisation, and he also identified the latent innovative/ positional group of enterprises between them. A positional company has neither the desire nor ability to change whereas an innovative company will have both the will and desire.

Making further observations in the context of innovation and environmental adaptation based on the results of the research 'In competition with the World' (Chikán et al., 2004), three groups of enterprises can be identified (Hortoványi and Szabó, 2006a): (a) Entrepreneur (active), (b) Offensive (active) and (c) Defensive (passive) enterprises (see Table 3).

As we can see from Table 3 focusing on high risk project is more typical of the Entrepreneur enterprises than of the other two groups, though it doesn't mean that the companies belonging to that group are irresponsible. The entrepreneur companies are 'cautiously brave': they work on more than one project at the same time hence decreasing the risk of their portfolio and they only proceed in small steps - aware of new information, constantly learning - during realizing their ideas. Since their commitment is lower, their loss is also smaller if an idea doesn't meet the expectations and hopes set earlier.



**TABLE 3:** Corporate strategies based on the innovation and entrepreneurial orientation

	<b>Entrepreneur</b>	<b>Offensive</b>	<b>Defensive</b>
The introduction of the new products at the company	Regular	Regular	Occasional
The innovation	Prominently important	Important	Not important
The role of the innovation in the corporate strategy for the employees	Unambiguously defined	Defined	Ambiguously defined
Risk-taking orientation	High	Medium	Low
Is the executive leadership able to tolerate failure?	Yes	No	No
Does the marketing view prevail significantly in innovation?	Yes	Yes	No

*Source: Balaton et al. (2007)*

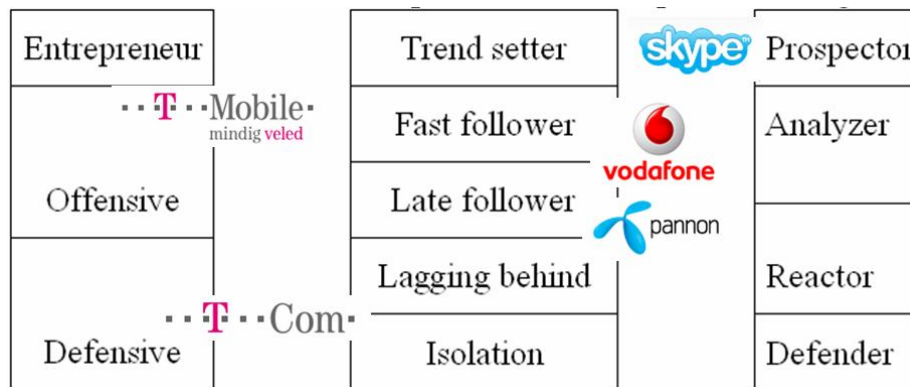
At the members of the Offensive group similarly to the case of Entrepreneur companies, the endeavour for innovation can be observed, but along basically conservative values. The introduction of new products, innovation or the role of marketing is usually less important for the Offensive enterprises than for the Entrepreneur ones. The toleration showed in regard of failure is also lower at the Offensive enterprises than as we have observed at the Entrepreneur companies. Regarding that we might suppose that learning from own mistakes is a less embedded part of the organisational culture. At the Offensive companies – on the contrary of the previously discussed ones – it often happens that there is ‘no time’ for innovation which shows similarity with the third type of companies, the Defensive ones.

The main characteristic of the Defensive companies is the following, lagging and adapting philosophy. The Defensive companies usually don’t have time for innovation, and perhaps that’s why the role of the marketing view and the introduction of new products are insignificant and the introduction of new products can be regarded incremental development. The companies belonging to that group don’t prefer projects with high risk. It is worth emphasising that the influence of the executive leadership is dominant in the creation of the strategy. Comparing the certain strategies reveals that the Offensive and Defensive strategies mainly differ from the Entrepreneur ones in the way of the leadership tolerating failures and the importance of innovation.

### 2.3.4 Comparing different strategic adaptation archetypes

The typology of Miles and Snow shows several similarities with the adaptation strategies created based on innovation skills and entrepreneurial orientation and the earlier described proactive-reactive classification. Though the certain types of strategies do not correspond totally with each other, there are still similarities between them, which are demonstrated on Figure 9 on the example of long-distance sound communication.

**FIGURE 9:** Comparison of the adaptation strategies



*Source: personal interpretation based on Balaton et al. (2007)*

Reviewing the configurations evolving as the effect of the external and internal environment, my assumption – in accordance with the ideas of the configurational school – that all the strategic schools and configurations have their appropriate time and place got confirmed. That's why it is reasonable to longitudinally examine the relation between structure and strategy. The development and improvement of the enterprises are important from the everyday management's point of view as well.

It is a basic question for the leadership intended to adapt to the environment that how they should do it. The real question in the relation of strategy and structure: which one has to change first? The management can work out the concept of the strategic change, then realize it and finally develop the structure corresponding with the new strategy, 'break in' the new organisational processes, build up the communication channels etc. if the pace of the environmental changes is relatively slow.

In a rapidly changing, turbulent environment it is possible that by the time that the new strategy evolves and the new processes are working smoothly another, newer strategy is needed, so there is no time to enjoy the fruits of that strategy (Antal-Mokos et al, 1997).

A question that arises is what kind of adaptation strategies can be considered viable along different environmental conditions? I will return to answer this question when I formulate my hypotheses, because it is important to get to know first the followed strategies and the performance configurations.

I will use in the one-dimensional, 5 point scale for measuring the perception and influence of the environmental changes, but I will use the methodology of creating multi-dimensional configurations in the forming of the performance configurations.

## ***2.4 The strategies followed and the rise of ambidexterity***

### **2.4.1 The strategies followed by the enterprises**

Mintzberg et al. (1998) divided the corporate strategies into five categories: intended, deliberate and unrealized, emergent and realized strategies. In this context the followed strategies belong to the deliberate category, namely they are realized strategies which were contemplated and executed by the leaders. In some cases they can be emergent strategies, but it is very important that the leaders are aware of the strategy (pattern) followed by the company.

During my research I analyse the under mentioned followed strategies:

- a) The company followed withdrawal strategy: it concentrated its resources on defensible positions
- b) The company followed defending strategy: it concentrated its resources to defend existing positions
- c) The company followed stability strategy: it concentrated its resources to strengthen existing positions
- d) The company followed growth strategy: it concentrated its resources to build new strategic positions
- e) The company followed offensive strategy: it concentrated its resources to both build new strategic positions and weaken competitors' positions
- f) The company followed focusing strategy: it concentrated its resources on a given narrow market segment
- g) The company doesn't follow any consequent strategy.

James G. March (1991) named exploration and exploitation as the two main strategies followed. The above mentioned strategies can be classified into these categories by the following way: (1) Exploitation: defending, withdrawal, stability and focusing; (2) Exploration: growth and offensive.

#### **2.4.2 The adaptation paradox**

We meet the adaptation paradox in the course of strategy creation related to the industry change (Burgelman, 1991). In the interpretation of the adaptation paradox, the adaptation to the environment is very important, but the constant adaptation to the existing factors decreases the future ability of adaptation.

According to Burgelman the change carried out in the strategy is always smaller than the change happening in the environment, therefore the alterations mainly concern the peripheries of the strategy, and there is no change on the core areas. Hence during the reorientation the companies facing the competition rather strengthen the already existing activities instead of looking for new ones. This leads to the hypothesis that in case of crises the companies typically follow exploiting (defending, withdrawal, stability or focusing) strategies.

Based on Burgelman's argument the renewal of the strategy usually happens through an autonomous strategic process, the internal experiments and the strategy selection helps the long term adaptation of the enterprise to the environment.

The evolutionist view is often connected with the functionalist view: those activities that serve the best the interest of a group or society, get confirmation, while the others get selected through a process that can be divided into three parts. The first phase is the emergence of new variations. It doesn't matter whether these are intentional or involuntary. What's important is that a natural selection process evolves among the several initial alternative solutions, 'initial attempts' born in the abovementioned way: certain variations are confirmed and retained, while others disappear.

Child (1972) pointed out that the view, which says that the organisational structure is unambiguously determined by the environmental factors, technological level and other external factors is not correct. The decision makers of the company actively contribute to the manipulation of their own environment, in order to achieve the goals they have set. They either ignore the changes happening in the environment or they alter the organisation.

Child's ideas were affirmed and further developed by Kuwada (1998). According to his researches the process of strategic behaviour has the following steps: (1) the organisation creates an environment for itself (frameworks, factors), (2) defines the problem and its own situation (relations between the factors), (3) builds up a rational planning process, and (4) recognizes the action opportunities and interprets its results.

Thus the relation between the environment and the organisation is variable. We should have a look at the relation between the organisation and performance. In this case Child (1972) gets to the conclusion that organisational structure has a limited effect on performance. He names the dominant coalition as the cause of the appearance of the organisational variations. The alterations of the goals set by them cause changes in size, technology or position. In this interpretation the proactive behaviour of the company is determined by the leader or dominant coalition.

Child's idea overlaps the results of Rumelt (1974: 149) saying that 'structure follows fashion as well'. Rumelt confirmed the theory of Chandler (1962) on a big sample in which he stated that the companies usually go through four stages during their growth: (1) initial acquisition of resources, build up of the distribution channels, (2) more efficient use and co-ordination of resources, (3) entering new markets after the saturation of the existing ones, (4) developing divisions. Furthermore he detected the changes between 1949 and 1969 showing that the large enterprises diversified even without any strategic concept. Based on our current knowledge Mintzberg et al. (1998) would add focusing on core competencies as the fifth element which is a very fashionable suggestion nowadays, and was also pointed out by Szabó and Vida (2009) in connection with outsourcing and shared service centres.

Contradicting Child's view, Burgelman (1991) represents the view that strategy is based on the current technology, economic and cultural factors and adapting to these, the task of the leader is to create such a strategy that enables the organisation to attain further success. Therefore the organisational structure defines the competencies of the organisation and determines its aims. Strategy consists of technical, economic and cultural regulations. These regulations serve the purpose of maintaining the character of the organisation. He uses the theory of population ecology for strategy building. During the selection, the participants on different levels perceive strategy differently therefore variations appear. The objectives set in the strategy cannot be achieved without internal selection systems.

Thus the primary task of the top management is managing the administrative tools (strategic planning, control system, incentive systems), developing cultural (behavioural norms) mechanisms and selection systems.

Based on earlier experiences, organisations rather create variations than build up completely new activities; moreover as the company grows, sooner or later the appearance of autonomous strategies is inevitable. The autonomous strategies can evolve on all levels in regard of the fact that certain individuals, groups are ready to start activities that exceed the borders of the current strategy. These autonomous initiatives are based on the totality of the competencies of the organisation. They can be derived from any level, but – based on the researches of Burgelman – mainly from those levels which have connection with new technological developments or financial resources.

The effect of the management's cognitive patterns is significant at the selection mechanism. If previously the management have created only a few regulations, during the selection process they prefer personal interaction and accept the autonomous initiatives as part of the organisation if they find it successful (viable) (Mintzberg et al., 1998). Thus retention can happen if it is proved itself that the autonomous strategy will get the appropriate resources in the future as well (it is subjective, because as Child (1972) has also pointed out, the dominant groups have an influence on the decision). The retention mechanism, which enables the maintenance and renewal of the 'positively chosen variations', strictly determines the 'optimal choice from the unambiguously defined set of opportunities' through routine processes of the organisations.

Besides that, the realization of the autonomous strategic process is difficult, because as a result of the autonomous initiatives, precious groups might separate from the organisation if they feel they have missed an opportunity. Nevertheless most of the organisations rather use the inducted strategic process because of the expenses, since the existing strategy doesn't need extra (sunk) costs.

### **2.4.3 Renewal and the sustainable corporate growth**

The most exciting question of the strategic management is the renewal, or specifically the strategic and organisational realization of the continuous renewal. The configurational school is about change, but its main point is continuity.

If a strategy is made for change, it will also stabilize both the process and the developing state. ‘... describes the relative stability of the strategy within the given state, which is renewed occasionally through quite dramatic jumps.’ (Mintzberg et al, 2005: 328).

The growth and growth ability of the organisations sustainable on the long run depend considerably on the enterprises’ ability to renew and their entrepreneurial behaviour. The ability to renew and the conscious entrepreneurial activity – also at established organizations (Garud and Van De Ven, 1992) – have to become part of the strategy of the enterprise, and the strategy formulation processes.

Therefore both the induced and autonomous strategic processes are necessary, – using the categories of Burgelman– the selection process has to be directed in a top-down and a bottom-up way. This contributes to the reorientation of the strategy, and through it to the reorientation of the whole company (the strategy determines the structure – Chandler, 1962). According to Hurst (1995) the role of the charismatic leader is acquiring resources and leading across the death-valley period while maintaining stability as well. Moore (2005) discusses the connection between the life cycle and the innovation strategy of the enterprise (Table 4).

**TABLE 4:** Connection between corporate life cycles and innovation strategies

Life phase	Innovation strategy of the organisation
Early market	Fragmentation innovation
Abyss	-
Bowling alley	Application innovation
Tornado	Product innovation
Early main street	Process innovation
Mature main street	Experiment and marketing innovation
Declining main street	New business models and structural innovation
Breakpoint	-
End of the life cycle	-

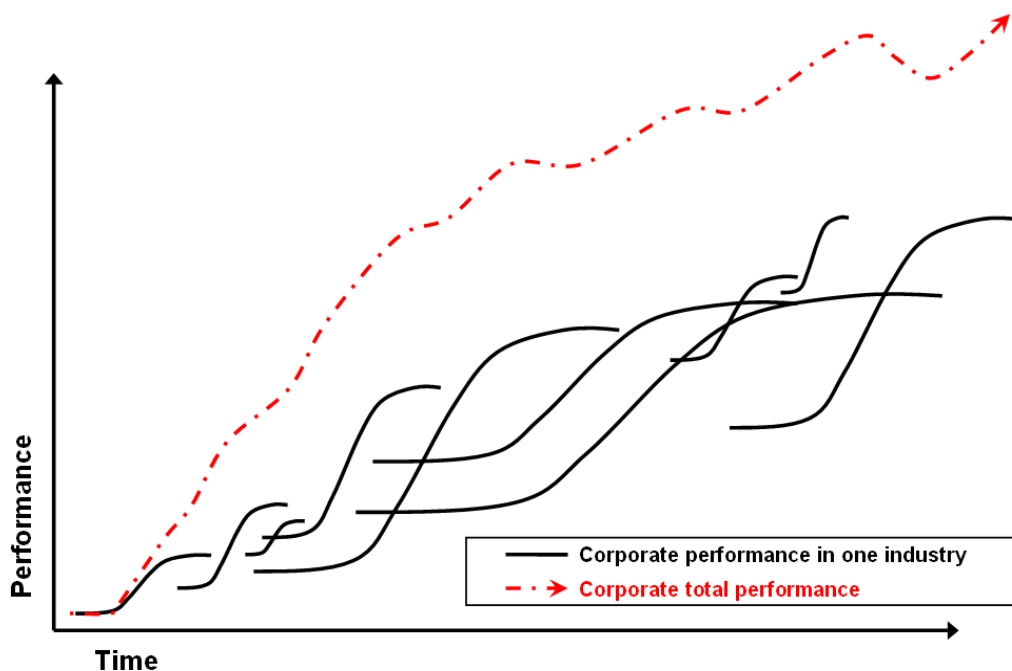
*Source: Based on Moore 2005: 176 and Hoffer and Iványi 2008: 54*

Serious empiric examinations stand in the background of the theories presented in the dissertation. The researches that examine the growth obstacles using quantitative, questionnaire data acquisition methodology and mathematical-statistical analysis are the following for example: Lumpkin and Dess 1996, Stopford and Baden-Fuller 1994 (Davidsson, 2004). At its appearance each of the researches marked a new direction of the examined field.

The explorative behaviour of the enterprises provides possibility for the enterprise to leave the ‘sinking ship’ in time, when the industry turns into a rapid decline. Proactive behaviour makes possible changing the industry, and reduces the costs and risks of it. As the result of the conscious balance between exploitation and exploration the enterprise becomes capable for sustainable growth (Figure 10).

According to Lipitt and Schmitt (1967) growth is almost steady within each phase, but after a critical size operating disorders manifest themselves in the organisation, when the management has to answer new questions in order to continue growth. They emphasise that the crisis situations appearing in each phase can emerge in other periods as well (e.g. an enterprise in the maturity stage might face a new competitor, its market can collapse), but the maturity refers to the way how the leaders face the different organisational crises. According to Galbraith (1982) if a problem in the development stage isn’t handled, it will be a more difficult problem in the further stages.

**FIGURE 10:** Sustainable corporate growth



According to Greiner (1972) it is determinant how the organisation solved its former problems. He found that evolution and revolution phases follow each other during the growth of the organisation. In the evolutionary phase the development is unbroken, undisturbed, in the following revolutionary phase problems emerge, the organisation struggles with locks. The development of the enterprise depends on whether the management finds the answer to the challenges of the revolution phase or not, because getting into the next evolution phase is only possible this way.



The validity of the early development phase of Greiner's model was examined by Salamonné (2006) in the Hungarian context. She pointed out that the model is valid, but during the improvement it is not certain that each phase manifests itself, leaping over them is possible at every enterprise.

Miller (1976, 1979) dealt with archetypes – strategy, structure, situation, processes and the transition between them. He regarded the changes of strategy and structure as quantum-leaps, not a constant process (Miller and Friesen 1982). A lot of things change at the same time in case of a strategic revolution. If several factors change at the same time and within a short interval, the configuration doesn't change in the strategy-structure-systems order.

According to Quinn and Rohrbaugh (1983), as well as Quinn and Cameron (1983) corporate growth is the focus on external and internal problems, the solutions gave to them and the sequence of the changes between flexibility and control. In Mintzberg's (1989) opinion growth can be regarded a form of power reorganisation. In order to grow a new power structure has to be rooted in the enterprise as well.

Audretsch and Ács (1990) are of the opinion that most of the start-ups are of very small size – in most cases they are too small to remain in the industry. According to the authors the explanation of the survival of the small firms is in their learning strategy. The firms can survive and grow by conscious learning and adaptation, even if their size doesn't reach the optimal value. Miller (1985) writes about the creation and exploitation process of knowledge in connection with learning and life cycles. High qualified professionals are needed to exploit knowledge, while by the establishment of the routines lower-qualified people can take over the tasks gradually. In contrast of Miller's interpretation Mintzberg et al. (1998) shows that the former prominence is – in changed environmental conditions – the basis of the failure. The most often occurrences:

- The focusing trajectory: Technological focus – the best in technology, but has no real value for the consumers;
- The venturing trajectory: Growth orientation in any way, they also jump into something which they aren't good at;
- The inventing trajectory: they spend the money of the world for moping researches
- The decoupling trajectory: The overuse of the previously valuable brand name by poor quality products.

There are some, who will always be small (Vecsenyi, 2003). The life cycle of the family businesses can connect with the life cycle of their founders (Szirmai, 2002b). On the contrary in the forced growth model of A. T Kearney (2009) the enterprises are intended to be set on a conscious growth path. The model consists of four steps, whose succession proves the growth of the organisation: (1) fundamental business processes, understanding and arranging the activities, (2) organisation and organisational culture shaped for growth, (3) strategic marketing activities and (4) stretching, during which the previously formed systems are induced to continuous renewal

From the empirical examination point of the dissertation it is important to mention the life-cycle determined by the Hungarian market and operation environment (Szabó József, 2008). Large corporations sunk to the deepest point in 1996, then grew, mainly through multinational companies. Medium-size companies grew until 1995, and then suddenly stopped. Small companies have been developing starting from a low level. To sum it up: deepest point in 1995, then continuous development until 2007. The total performance barely reaches the 1980 level.

#### **2.4.4 Managing changes**

Change is a continuous phenomenon both nowadays and throughout history, but the pace of the change seems to accelerate. Change is an unavoidable result of innovations, whose effect and impact are often unimaginable and underestimated by many people, included those individuals and organisations, too, from whom the innovation derives. Managers want to govern this process better and more proactively, but there are still several unanswered questions (Schendel and Hitt, 2007):

- How can and has to be change consciously (actively) managed, while one enterprise innovates, and perceives the innovations in the industry?
- How can the effect of innovations be tracked (e.g.: in case of organisational structure and business model)?
- What are the primary tasks in the preparation of the enterprise for the changes?
- What change forms are reasonable and effective?
- What obstacles might change run into and how can these obstacles be avoided or how can we overcome them?

The literature of strategy, entrepreneurship and change management offers different solution alternatives for the efficient know-how for leading change (Kotter, 1999, Dobák, 1999, Bakacsi et al., 2005, Balaton et al., 2010, Zoltayné Paprika and Kiss, 1988), the collective application of those make the organisation both efficient and effective. Change management is a consciously managed activity, during which the enterprise gets from a configuration to another. The recognition of the strategic changes and finding the adequate answer to those bring the members of the change management team into an especially hard task. The corporate environment supposes the continuous revision of the strategy and the operation, which has a significant effect on the stakeholders of the organisation.

During the change management processes, the proper combination of the strategies, the creation of the favourable reception of changes and the freezing of the results are critical factors.

For a good change manager it isn't enough to know the separated effects of the single organisational factors, but they need to have a complex knowledge about what change management is, what change types, characters and dimensions are existent, what the external and internal causes of the strategic changes are. Moreover he/she has to possess knowledge about the characteristics of the directed organisational changes and the process of the problem solving. He/she has to know why it is necessary to create enough sense of urgency, and which factors hinder its development, what the success factors of the successful change management are. Moreover it is necessary to select a change management style and team which is suitable for the situation. A good change management team can apply several change management strategies, communicates all of its actions and endeavours to preserve the results permanently (Balaton et al., 2010).

The start and the maintenance of the changes is not an easy task, because for this the (artificial) maintenance of the creative tension is needed in the organisation. In order to maintain the creative tension, the vision has to be utilized, learning has to be directed and planning has to be given power (Mintzberg et al. 2005: 373). Hindering factors in the recognition of the necessity of changes and in the creation of sense of urgency (Kotter, 1999):

- absence of a major and visible problem or crisis,
- too much happy talk of the senior management,
- low overall performance standards,
- performance measurement system focusing on wrong metrics,
- abundant resources,

- operating in silos with organisational structures that focus employees on narrow functional goals, and the underestimation of the power for denial that turns a blind eye to problems
- not aware of how suppliers and customers actually view performance,
- low confrontational culture.

Further significant challenge of changes is that at least one major factor of the system changes (morphogenetic) (Dobák, 1999, Csath, 2001).

The degree of relative change can be different, the reorganisation is at the highest degree, during which the current, unfavourable state of the enterprise require urgent and fundamental changes. The turnaround is smaller, in regard which the redefinition of the enterprise fundaments happens in the interest of the future competitiveness of the enterprise. The adaptation is at a lower degree, which refers to the small-scaled but continuous responses to external challenges, without which the enterprise would get into a competition disadvantage. Tuning is the smallest scale of change, in this case there is no immediate constraint for change, but the enterprise looks into the future proactively, and thus it is committed to the continuous top-ranking developments (Table 5).

**TABLE 5:** Classification of change types

Time horizon of change	Foreseeing	Continuity of change	
		Step-by-step, continuous	Strategic, not continuous
Reactive		Tuning	Turnaround
		Adaptation	Reorganisation

*Source: Balaton et al. (2010)*

Pettigrew (1985, 1987) reckons change as a range of episodes. He examined the changes between 1969 and 1986 (which two periods included two oil crisis), and came to the conclusion that changes are not continuous and gradual, but sometimes a pattern of radical changes appears, which high level changes are connected to economic recession. The revolutionary changes induce change in the management, too, but opposed to Chandler the internal systems change (structure) first and it is followed by the change of the consumer focus of the organisation only afterwards. This practically corresponds to Burgelman's thought about the adaptation paradox.

According to Clemmer (1995) changing and managing are precluding concepts and changes don't have to be controlled manually, but the frameworks have to be set, and then change proceeds by it. Change can be ignored, resisted, reacted, exploited or induced, and the necessary frameworks and configurations have to be developed accordingly.

During change it is important, that it is very difficult to change everything at the same time, and it is not advisable either. Based on the recommendation of Mintzberg et al. (1998) we look for the best among the new, and keep the most useful among the old. The change strategy of Dickhout et al. (1995) is much more pragmatic than this general recommendation:

1. Evolutionary/institutional building: line managers direct the continuous change,
2. Jolt and refocus: change of the management is necessary,
3. Follow the leader: cutting the side-activities in order to have fast results,
4. Multifront focus: fast results stabilize the organisation, that can be followed by the multifront focus, changing many factors at the same time,
5. Systematic redesign: ad hoc workgroups, but planned change,
6. Unit-level mobilizing: the incorporation of the ideas of the middle management and the workers.

Changes can be induced top-down or bottom-up. Example for the top-down induced change is the drama of Tichy and Sherman (1993) in three acts, during which the prologue is the development of the new global playing field, and the acts are the processes of the organisation: (1) awakening, (2) envisioning and (3) rearchitecturing. The epilogue refers to the stability of changes, that history repeats itself.

Beatty and Ulrich 1991, as well as later Stopford and Baden-Fuller viewed the starting point of successful changes in the top-down enterprises: (1) committed top-team (2) simplification (3) development of new capabilities (4) maintain momentum and stretch the advantages.

Doz and Thanhauser (1996) regarded the transformations more efficient, in which: (1) internal efficiency, then external expansion (new possibility) (2) top initiative, then lower levels gradually take over the management (3) interpreting the new strategy concept for the divisions of the organisation, emotional acceptance and continuous learning.

Kotter (1995: 61, 1999) gives a more detailed guidance for the implementation of top-down changes:

1. Establish a Sense of Urgency
2. Form a Powerful Guiding Coalition
3. Create a Vision
4. Communicate that Vision
5. Empower Others to Act on the Vision
6. Plan for and Create Short-Term Wins
7. Consolidate Improvements and Keep the Momentum for Change Moving
8. Institutionalize the New Approaches

Beer et al. (1990) examined, why change programs aren't productive. They found the problem in starting changes from too high above. Successful changes were typically started by a local manager, which was supported from the top management in order to achieve success. The successful elements were spread throughout the whole firm:

1. the common diagnosis of business problems helps the commitment to change,
2. common vision,
3. consensus and resources,
4. expansion of revitalization (as possibility),
5. rooting,
6. monitor the revitalization and correct the mistakes.

Kaplan and Norton (2004, 2005) explained the configurations and changes as the problem of harmonization of the development and realization of strategy, and the short and long term efficiency. The question is how are immaterial goods transformed into financial benefits? They worked out a balanced score card (BSC) for supporting the performance focus, which they further used for introducing the strategic orientated organisation and the alignment.

They identified 5 principles of becoming strategic oriented, which also serves to lead along changes in the organisation:

- translate the strategy to operational terms,
- align the organisation to the strategy,
- make strategy everyone's everyday job,
- make strategy a continual process,
- mobilize change through executive leadership.

Kaplan and Norton (2005: 314) advice the concept of the progress from outside into inside as the proper schedule of managing changes, whereas the first task is value creation, and then comes the realization of the strategy. They understand 3 factors by value creation: (a) costumer focus (understand the consumer), (b) the innovation (suggest new ways) and (c) show results for consumers and shareholders. The realization of the strategy consists of four elements: (a) understanding the strategy: mission, vision, (b) reliability and predictability, (c) open communication and (d) teamwork: cooperation across organisational borders.

The BSC concept can be used excellently for start-ups and fast growing businesses as well, but in these cases there is a special emphasis on defining the differences of interests of the stakeholders, on the consumer value, on scheduling the results, on the strategic value processes, on immaterial goods, on actions and their financing Kaplan and Norton (2005: 423).

The change management recommendations presented up to this point are based on the idea that change has to be started immediately and carried out effectively. What happens if change management is about preparing for possible changes? What happens if we don't want to carry out a change in 6 days, 6 months or 6 years, but we have unlimited possibilities, or at least a few centuries for that? The changes of the history of the church serve as a good pattern of changes last for several centuries.

Mintzberg and Westley (1992) worked out three patterns of the changes of world religions lasting for centuries. In the frameworks of (1) enclaving the Church is open for any change, but separates these innovation plexuses. In case of a crisis, low support turns over and the new will be spread in the whole organisation. During (2) the cloning the aim is to make a new subunit on the model of the old one, but filled with individual interpretations. The unification can be ensured by trainings, during which the central 'confession' is agreed on. During (3) the uprooting the innovators are sent away. The new tenets fight with each other until in case of the success of a tenet the stabilization comes again.

Winter and Szulanski (2001) also pointed out the success of the cloning strategy, where the development and then the replication can be an extremely efficient business strategy in a big amount of the simple but best formula in the industry (e.g. the McDonalds.)

Donaldson (1996) judged the description of the configurations and change processes for being over-simplified. In his opinion presenting the extremes doesn't help in everyday life since it isn't prescriptive enough. Moreover he calls the attention to the change processes also being stable during the transition otherwise the change is not realizable.

Whitehead (Mintzberg, 1998: 347) composes even more extremely: 'Seek simplicity and distrust it'. On the contrary Hopewell (2002) points out that configuration archetypes and their explanations influenced more the management thinking than the most of the deep analyses.

#### **2.4.5 Ambidextrous organisations**

The topic of ambidextrous organisations is more and more popular among researchers who deal with strategy. The key question of it is the joint treatment of efficiency (exploitation) and effectiveness (exploration). (Tushman and O'Reilly (1996, 2002), O'Reilly and Tushman (2004), Raisch et al, 2009).

The ambidextrous organisations are able to manage successfully their existing activities and new products, services and processes at same time. The ambidextrousness can be realized in several organisational structures, in functional, cross-functional, spinout or ambidextrous structures, too (O'Reilly and Tushman, 2004)

Interpreting the growth model of Greiner (1972) I found that corporate growth is practically a sequence of external, market and internal, organisational management focus changes, which I identify as an initial concept of the ambidextrous organisations. In this model the ambidextrousness, the efficiency and effectiveness is realized through a sequential process. The model of Cameron and Quinn (1983) says more, because in their view four model plays a role in the life of the enterprise at the same time, but different models will be dominant. The ambidextrousness of the organisation can be interpreted as a 'rotation'. Using the model of Miller (1985) the ambidextrousness can be ensured through the proper rate of specific and general, and high-qualified and less-qualified professionals.

The majority of the enterprises struggle for the balance of the efficiency and innovation. The enterprises can gain efficiency in short term, if they replace their costly and unforeseeable activities by cheap routine processes. Though this exchange is extremely dangerous, because



the organisation loses its long term adaptation ability. The more routine processes there are, the less flexible the organisation will be. Therefore sometimes based on strategic consideration, disturbance needs to be created artificially in the organisation maintaining the creative tension (Raisch et al, 2009).

The trigger of the creative tension might be the open business model in which the innovations are come from inside as well as from outside of the traditional organisational borders. At the same time, there is the possibility to spin off those innovations that are not realizable in the parent organisation, but are viable/profitable otherwise (Chesbrough, 2002, 2006).

In economics János Kovács and Ildikó Virág in 1987 and 1988 proved with mathematic calculations that the cyclical growth results in bigger growth than the steady growth (Lukács, 2009). Is this statement verifiable also in management sciences that the sequences of exploitation and exploration result a better performance? How to determine the optimal cycles of exploitation and exploration?

The questions broaden the focus of research that the performance of every single company doesn't matter, but it is the performance of corporate population that has to be judged. This aspect meets the questions of Charles Darwin (1872) that it's not the individuals but the examination of species' competitiveness that is important. In 1869 Herbert Spencer created the expression "Survival of the Fittest" and in 1871 Charles Darwin used the word "evolution" for the first time in his book "Descent of Man". In the sixth issue of "Origin of Species" both words are included, the former is in the 4th, the latter is in the 7th, 8th, 10th. and 15th. chapters (Kampis, 1998).

The word "fittest" in the terms of Darwin doesn't refer to that whether one individual is the strongest or smartest within species or not but to how can they adapt to the environmental conditions and spread. Moreover, the primary subject of analysis is not the individual, but with the spreading of the most suitable unique attributes to the environmental conditions, it is the competitiveness of the species that matters.

Based on the presented theoretical models I consider those companies as ambidextrous organisations that:

- follow both explorative and exploitative strategies at the same time, or
- followed both explorative and exploitative strategies by turns during a 4-year period.

Furthermore I analyse the changes of ambidexterity of corporate population between 1992 and 2010 besides the ambidexterity of each company.

## 2.5 Identifying strategic configurations based on firm performance

The identification and description of the strategic adaptation archetypes and the clarification of its relation to the environment are the focus of the empirical research. I plan to identify and describe the archetypes of the adaptation strategies by using the methodology of the configuration school which was presented in the first part of the dissertation. This fits into the literature of strategic management, where configuration is described by researchers (follow the path of the game), while the transformation is mainly practiced by managers and described by consultants (set a trap) (Mintzberg et al., 1998).

Researchers are divided on the question of the classification of variables. The first stream is constituted by ‘splitters’, who take very small, highly differentiated units, use continuous measurement scales, and then correlate pairs of variables. According to them, sub-samples are significantly different in key ways which justifies the separation of variables in different classes in the model. Opposed to that, ‘lumpers’ argue that differences are not as important as signature similarities. One advantage of lumping is that neat categories simplify complexity hence it is easier to understand. That makes lumping to be more useful in practice, but not necessarily more accurate. Nevertheless, a certain style of leadership is efficient in a particular organisational form; hence the fit between the factors is important. In my opinion the examination of the variables in pairs – as suggested by ‘splitters’ – doesn’t provide us with the whole picture of the configurations because we would lose the joint effect of factors.

Moreover, Khandawalla (1970) argues that organisational efficiency isn’t determined by single factors on their own, but determined by the connections between these factors. The organisation is efficient because complementary factors are matched with one another. Based on my previous findings I also share this point of view and follow the ‘lumping’ method in classifying variables.

**TABLE 6:** A matrix of strategy content research

	Single factors	Clusters of factors
<b>Static conditions</b>	Linking particular strategies to particular conditions (e.g., diversification to industry maturity)	Delineating clusters of strategies (e.g., strategic groups) and/or clusters of conditions (e.g., generic industries) and their linkages
<b>Dynamic conditions</b>	Determining particular strategic responses (e.g., turnarounds, signalling) to external changes (e.g., technological threats, competitive attacks)	Tracking sequences of clusters of strategies and/or conditions over time (e.g., industry life cycles)

*Source: Mintzberg et al., 1998: 107*

During the development of the research frame the real content of the strategies are brought into focus instead of strategy creation process. The four main trends in content research are summed up in Table 6.

My choice of research methodology – taking into consideration the possibilities demonstrated on Figure 2 – is the dynamic conditions research with clusters of factors. In order to overcome the weakness of positioning school – namely extensive use quantifiable economic factors in measuring strategy – qualitative factors are also taken into consideration. In my opinion, the strategies which are embodied in the behaviour patterns of Hungarian enterprises also can be divided into strategic groups. Members of the same group – cluster – invest in very similar factor-combinations during their adaptation to their environment. Consequently, they are well separable from members of another strategic group. Different range of the empirical research can be differentiated in the field; the difference is attributed to the difference in their typological bases.

The empiric researches of Miles and Snow (1978) resulted in nowadays one of the best-known strategic classification in four industries (textbook publishing, food processing, health care, and electronics). The strategy types cover the possible organisational responses to the new environmental challenges: innovation (prospector), consolidation (defender), seek balance (analyser), not having strategy (reactor). Miles and Snow's strategic typology is intensively present in the scientific literature and a great number of researches were built on this classification (Antal-Mokos and Kovács, 1998, Hambrick, 1983 and 1984, McDaniel and Kolari, 1987, McKee et al., 1989, Shortell and Zajac 1990, Webster, 1992).

Most of the empirical research done in the field had a focus on the connection between strategy types and performance in relation to the competitive strategies. Some researchers apply the industrial organisation (IO) approach for the analysis of the competition in connection with the business strategies (Hatten and Schendel, 1977, Cool and Schendel, 1987). Other researches examine the clustering in single industries through developing the theory of the strategic groups, which show similar connections regarding strategic key-variables. Other attempts (Dess and Davis, 1984 or Miller and Friesen 1986) are aimed at creating a strategic set of concepts, such as Porter's generic strategies.

Although the strategic variables are partially different in the literature, for today those variables are formed which are included in a quite standard way in the empirical examinations of the strategy types (Doty and Glick, 1994, Galbraith and Schendel, 1983, Miller and Roth, 1994, Morrison and Roth, 1995).

The number of the variables moves between 30 and 50 depending on the specification of the research. Since the 1990's this Figure has stabilized at 40 and became a research standard (Desarbo et al., 2004, Morrison, 1993). The researchers typically don't interpret the variables directly, but they try to identify the latent strategic factors behind them. Table 7 shows the identified strategy factors of the former "In Global Competition" researches.

**TABLE 7:** Strategic factors based on the surveys of 1996, 1999 and 2004

1996	1999	2004
Organizational resources	Organisational efficiency	Leadership efficiency
Flexibility	Flexibility in processes	Quality of products
State relations	State relations	Flexible production and logistics
Technological level	Technological level	Financial status
Raw material supply	Raw material supply	High goodwill
Financial status	Financial status	Customer centricity
Products	Products	Innovation capability
Consumer demand satisfaction	Ethics	State relations
Cost-efficiency	Competitive prices	Growth
		Cost leadership

*Source: Antal-Mokos and Kovács, 1998, Antal-Mokos and Tóth, 2001, Hortoványi and Szabó 2006b*

While the positioning school assumes strategy formation as a deductive and conscious process, the configurational school takes the emergent, spontaneous strategies into considerations, too. Through the systematic analysis of the firms' past behaviour, we can identify clusters of common patterns (strategies), but these strategies cannot certainly be ranked.

The content of the strategy can't be entirely isolated from its creation and realization processes: it is born as the result of the selection from the different environmental factors, and the selection always results in giving up and losing another alternative. So it is not advisable to 'prescribe' the content of the ideal strategies, it is only worth calling the attention to the consequences of the given choices.

Competitiveness is an important factor of the research, which can be led back to one starting point of the positioning school, which says that the enterprises' environment is competitive (Chikán and Czakó, 2009, Porter, 1993). Based on this thought the enterprises compete in their environment and they follow definite behaviour patterns during their competition, which can be described by different structured aggregations of the competition characteristics.

The factor-configurations outlined this way are more important in the long term explanation of the growth than the independent effect of any single characteristics. Table 8 shows the researches' types of strategies that are considered the direct antecedents of my dissertation. These types of strategies are based on the databases that have been created during the research program 'In competition with the World'.

**TABLE 8:** Strategy types based on the surveys of 1996, 1999 and 2004

1996	1999	2004
Quality and customer	Follower, adaptive	Leader
Diversifying	Production efficiency	Adaptive
Structure and finance	Sales orientation	Differentiating
State relations	Organisational efficiency	Lead by technology
Production and finance	Quality of products and technological	Supplier*
Follower, adaptive	level	Focusing
	Stalled in the middle – less ethic	

\* The supplier strategy has been renamed to outworker strategy (Chikán and Czakó, 2009)

*Source: Antal-Mokos and Kovács, 1998, Antal-Mokos and Tóth, 2001, Hortoványi and Szabó 2006b*

The examination of configurations and adaptation strategies can be done by (1) analysis of recent situation (what's the situation in 2009), (2) analysis of temporal changes (how changed between 1992 and 2009), (3) result of past behaviours (what and how changed the standards of activities) and (4) the level of intentions (what they do / are planned to do in the future).

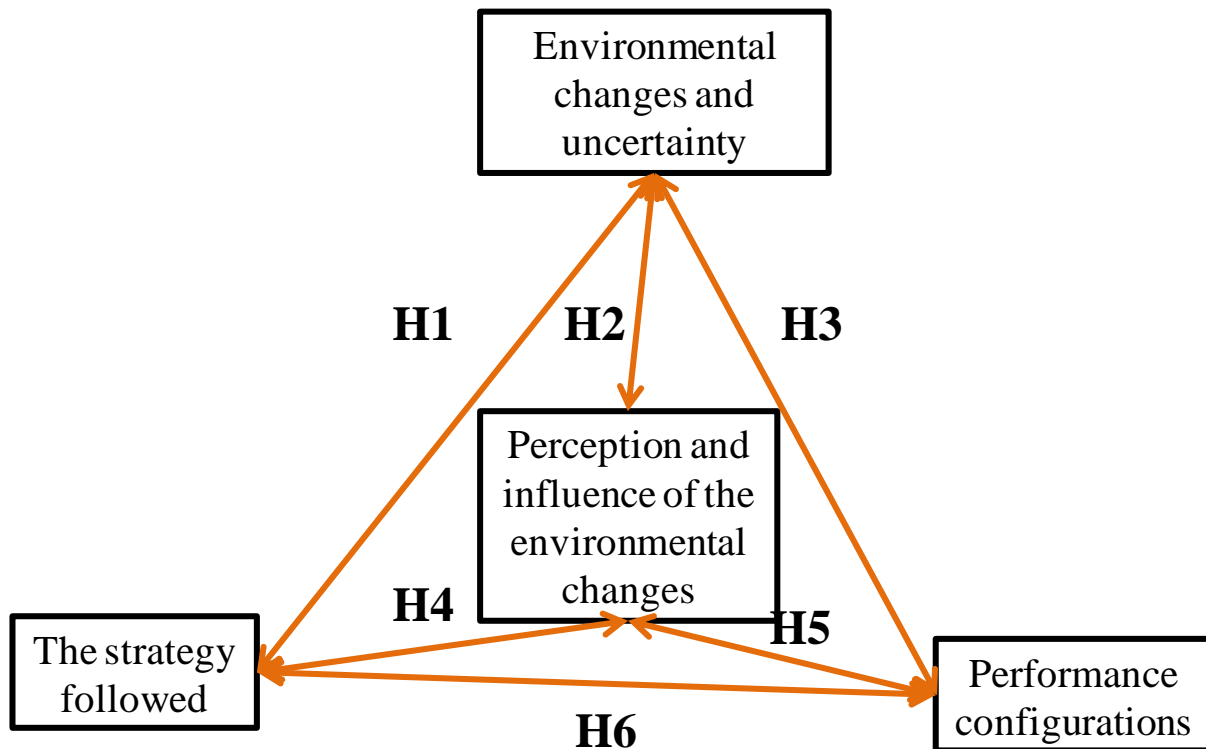
In the dissertation the strategies are seen as the organisations behaviour pattern. Despite the fact, that the behaviour patterns are very diverse; only some (generic) strategies and configurations – as it is proved by former researches (Antal-Mokos and Kovács 1998) – can be identified based on the consistent chain of their actions. (Table 8.). From this aspect the analysis of past behaviour patterns provides more consistent results, than the analysis of intentions. That's why I make the further examinations based on the (1), (2) and (3) options.

In summary, nowadays it isn't an important research question whether it is necessary to change, but how can be maintained the resilience and the efficiency of the configuration at the same time. In response to this research challenge I would like to identify the configurations and their development in relation with the Hungarian changes of the past 20 years.

## 2.6 Hypotheses based on the explored theoretical conceptions

To conclude the theoretical elaboration of the dissertation, I formulate research hypotheses based on the explored theoretical conceptions. I formulate hypotheses in respect of the connections of the main 4 research elements, namely the (1) environmental changes and uncertainty, the (2) the perception and influence of the environmental changes, the (3) strategies followed and the (4) performance configurations, which are summed up in Figure 11. It is to be noted that in respect of the environmental changes and uncertainty I resolve further the certain hypotheses and interpret the connections for population and individual firms, too.

**FIGURE 11:** The research model and the hypotheses



Based on the introduced theories in chapters 2.2. and 2.4. of the paper:

$H1_{\text{population}}$ : The economic growth on the macro level fosters exploration while recession retains exploitation.

$H1_{\text{individual}}$ : The exploitative firms perceive environmental uncertainty higher than explorative firms.

Based on the introduced theories in chapters 2.2. and 2.3. of the paper:

H2<sub>population</sub>: The perception of the environmental changes and the capability to influence them is independent from the external environment.

H2<sub>individual</sub>: The proactive firms perceive their environment less uncertain than reactive firms.

Based on the introduced theories in chapters 2.2. and 2.5. of the paper:

H3<sub>population</sub>: In a given environment more performance configuration is viable.

H3<sub>individual</sub>: The sources of environmental uncertainty have different impact on the configurations.

Based on the introduced theories in chapters 2.3. and 2.4. of the paper:

H4: The explorative firms are able to recognize the environmental changes better than the exploitative firms.

Based on the introduced theories in chapters 2.3. and 2.5. of the paper:

H5: The better a firm performs, the better it can perceive and influence the environmental changes.

Based on the introduced theories in chapters 2.4. and 2.5. of the paper:

H6: Exploration and exploitation are typical to different performance configurations.

### 3 RESEARCH METHODOLOGY

#### 3.1 Steps of the empirical examinations

International methodology to identify strategic configurations was replicated 3 different point in time by Hungarian researchers: Antal-Mokos and Kovács (1998), Antal-Mokos and Tóth (2001), and Hortoványi and Szabó (2006b). The above mentioned researchers examined nearly identical variables (in the last two cases the variables were completely identical), analyzed samples with similar composition (all of them used the actual database of the Hungarian competitiveness research program). Interestingly, however, they discovered different (only partially overlapping) strategies even though they used identical research frameworks. It made the comparison of the strategy types to be very difficult accross years. In order to overcome this barrier, in my dissertation I have introduced a new methodology instead: an integrated analysis of the samples. The advantage of the replication of analysis with integrated research methodology over the aggregation of previous results is that we can get a reliable, comparable picture of the strategic adaptation ability, ambidexterity and competitiveness of Hungarian (middle-size and large) firms. At the determination of the analysis steps I have adjusted the methodology to the expectations of our days, which most important cornerstones are: the introduction of a novel methodology (MDS), the enhancement of the transparency of the analyses, and through these the increase of research reliability.

The steps of the research were (*in italics* new steps compared to previous research are highlighted):

- Formulation of the research question
- Overview of the existing literature
- *Extension of the interpretation of strategic adaptation, exploring different adaptation possibilities and more thorough examination of the environmental context;*
- *Formulation of hypotheses on the basis of the existing theory;*
- Choice of research methodology to the examined phenomenon;
- *Examination of the changes in the macro environment based on the GDP growth*
- Joining the “In Global Competition” research program and the selection of variables;



- *Making an uniform and cleaned database based on the questionnaire surveys collected in 1996, 1999, 2004 and 2009 as part of the “In Global Competition” research program*
- *Analysis of the summed-up sample*
- Comparison of results with the results of the preceding surveys;
- Examination of the composition and the representativeness of the examined firm sample with reference to the thematic working papers of the “In Global Competition” research programme;
- *Description of the examined sample characteristics;*
- Descriptive analysis of variables and control variables;
- Further filtering of the variables’ data and preparing them for deeper analysis;
- *Analysis of variables through the single surveys’ subsamples over time;*
- *Testing the hypotheses relating to the population on the basis of the development of the variables over time;*
- Exploration the connections between the research and control/descriptive variables;
- *Compression of the variables’ data with multidimensional scaling;*
- Identification of performance configurations (strategy types) with clustering;
- *Examination of the explanatory force of the results with different cluster numbers and based on these, determination of the ideal number of clusters;*
- Examination of the connection between control/descriptive variables with crosstabs;
- *Test of hypotheses with association and correlation coefficients and crosstabs*
- *Interpretation of the results and qualitative cross-check of results through managerial interviews.*

Further on I introduce briefly the “In Global Competition” research program which serves as a base of the empirical researches.

### **3.2 Background – The “In Global Competition” research program**

The database is made up of Hungarian enterprises, the data was collected in part of the research program called ‘In competition with the World’ in 1996, 1999, 2004 and 2010 (cf. Chikán et al., 2004, Chikán and Czakó 2005, 2009). Each year around 300-300 enterprises provided data for the research. The representativeness according to firm size (full time employees) and location had major part in the data selection.

As it was mentioned before, each survey contained almost the same questionnaire, in app. 90% of the very same questions. The 10% difference was due to the differences in their focus which was adjusted to the particular socio- and economic conditions of the year of data collection. For example, the main research questions was in

- 1996: Do the Hungarian firms employ the solutions which were widespread in market economies?
- 1999: How have the operation and the operating environment of the Hungarian firms changed in brief 3 years?
- 2004: How has joining the EU influenced the competitiveness of the Hungarian firms, and what operation development have the Hungarian firms reached?
- 2009: In which situation has the global financial market and demand crisis reached the Hungarian firms, and how has it influenced their operation?

‘The research program was started in 1995 with the purpose to study the Hungarian economy going through a transition in order to dissolve the contradiction of having high performers at micro-level and disappointing results at macro-level. The research program was launched with the comprehensive initial hypothesis, that in the microsphere are much more factors which are give rise to optimism than what the statistic data show at national economy level. Our aim was to explore these factors and to evaluate them in an international comparison. The subject of the research was the competitiveness of the microsphere, which was investigated several years earlier in the United States in research projects by several “business schools” (Chikán and Czakó, 2005: 8). The approach of the US Competitiveness Council served as the model of the surveys, whereas it tried to explore the environmental factors, which influence the competitiveness of microsphere, the operating and strategic characteristics of the national enterprises with eight research projects. One of the most important statement of the research program was in the middle of 1997, that the economic transition was over, so the operation of the enterprises were essentially influenced by the limits and principles of the market economy (Chikán and Czakó, 2005).

In the course of the research, 4 different but partially overlapping questionnaires were submitted to each respondent enterprise. Besides the CEO of the firm, the production, the commercial and the financial manager were asked to fill in a questionnaire tailored to their functions. Thus, the database I was using for my analysis is consisted of more than 4,800 respondents.

The 'self-assessment' method is the suitable survey method for the research of the examined phenomenon, because Hambrick (1981), just as Hambrick and Mason (1984) verified it empirically, that the top managers are fully aware of their firm's weaknesses and strength, and they follow continually the alteration of these factors. The results of Chandler and Hanks (1994) confirmed it too, that the assessment of the top managers and the archived sales results correlate with each other. Consequently, the data is assumed to provide reliable information for the analysis.

"In the course of 'In Global Competition' research program an own business competitiveness definition was defined: business competitiveness is an ability of the firm, that the enterprise can provide such products and services to the customers permanently, beside keeping the norms of social responsibility, which the customers rather buy beside the profit ensuring conditions than the competitors' products (services). The condition of this competitiveness is that the enterprise has to be able to detect the environmental changes and the changes within the enterprise and to conform to them, with the accomplishment of permanently more advantageous competitive requirements than the competitors' (Chikán and Czakó, 2005).

The key part of the definition is the adaptation of the enterprises, which is examined in the competitiveness research in four fields: (1) strategy, (2) management and decision making, (3) value creation, (4) inter-organisational connections. In my dissertation I'm focusing on the first dimension on the dimension of strategic adaptation.

In connection with the research program 'In Global Competition', on the occasion of the single surveys, the research results are published in the working paper series. A research plan comes before the working paper, which determines research subplans. Final working papers are made as the closing of each subplans from which the final working paper of the research program is gathered. As the direct base of my researches I list the following working papers, which base the context of my dissertation:

- working paper connected with the determination of research framework (Chikán and Czakó, 2005)
- flash reports (Czakó et al, 1999, Chikán et al, 2004 and 2010)
- working papers connected with the introduction of the sample and the control variables (Lesi, 2005, Wimmer and Csesznák, 2005, Könczöl 2007 and 2008)
- working paper(s) connected with strategic adaptation, subproject final working papers and published articles (Antal-Mokos et al, 1997, Antal-Mokos and Kovács, 1998, Antal-Mokos and Tóth, 2001, Balaton, 2006, Hortoványi et al., 2006, Hortoványi and Szabó, 2006b)
- final working papers, reports, and published books (Chikán, 1997, Czakó et al, 2000, Chikán et al, 2002 and 2006, Chikán and Czakó, 2009)

### **3.3 Databases and sample characteristics**

#### **3.3.1 Used databases and variables**

For the empirical examinations I used the within the scope of the Competitiveness Research Center of Corvinus University of Budapest's competitiveness firm survey (hereunder called: VKK) in 1996, 1999, 2004, and in 2009 made data acquisitions and databases, namely:

- vezer.sav (data acquisition in 2009, last modified at: 2009.12.03),
- vkvez2004 új változókkal050704.sav (data acquisition in 2004, last modified at: 2005.07.04),
- VEZ99J.sav (data acquisition in 1999, last modified at: 1999.07.05), and
- 96VEZERIG.sav (data acquisition in 1996, last modified at: 1996.07.19).

Before using the database, unification of the data was necessary. As main rule I held the structure of the database in 2009, except for the dichotomous variables type yes or no I employed the earlier coding practice (0=no, 1=yes in contradiction to the 2=no, 1=yes practice in 2009).

In the course of the empirical research, in line with the research model introduced in Figure 3 and 11, I examine the following phenomenon with the variables found in the databases:

- estimation of the environmental uncertainty,
- the strategy followed,
- relation to the environmental changes of the firms (proactivity),
- firm activity level (performance dimensions and configurations),
- examination of the connections between variables.

Employed control variables through the examinations (They are described at the introduction of the sample characteristics in the following sections):

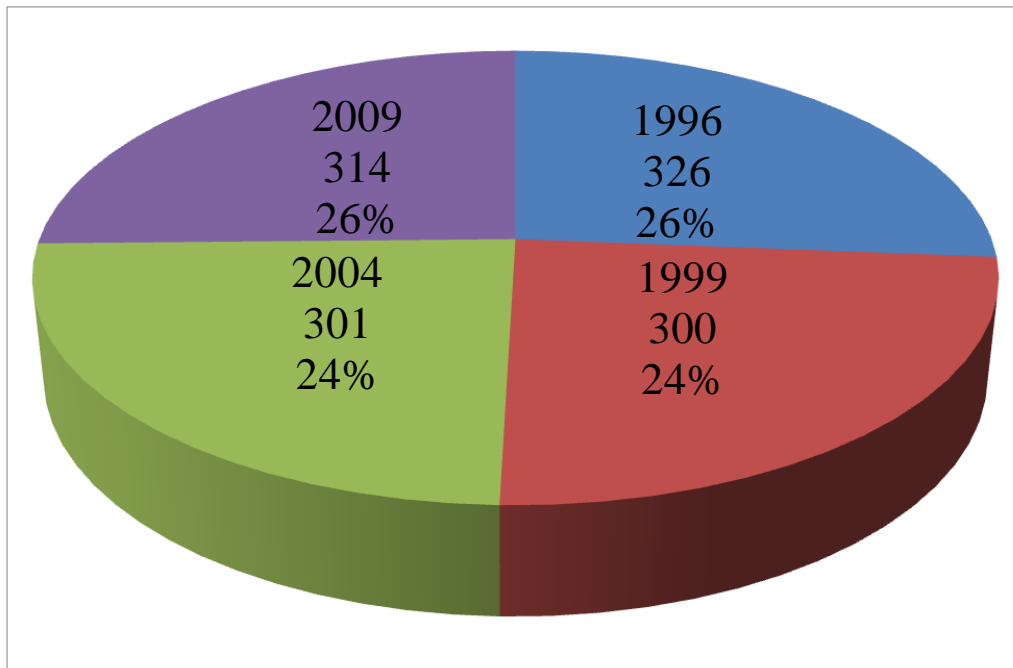
- size by number of staff, size by revenue, size by assets,
- export rate,
- proprietary structure,
- main line of business (industry), and
- territorial position.

### **3.3.2 The characteristics of the single surveys' samples**

It derives from the characteristics of the questionnaire(s), that we are curious to the answers of the four top managers on the occasion of the surveys and the statements are related to mostly the medium-size and big enterprises according to the number of staff. The most important reason of this is that the fragmented organisation structure is only formed above a certain size of the enterprise. In the consequence of this, during the first three surveys the examined firms had more than fifty employees and they were independent legal entity enterprises, but this criterion decreased to 10 people relating to the survey in 2009.

In the course of the surveys the firms were chosen from the enterprises who has already taken part in the questionnaire surveys and from the Hungarian Central Statistical Office (KSH) databases, with the aspiration that the sample has to be representative on the basis of staff number and size of the population of fragmented structured Hungarian enterprises. In the databases of competitiveness surveys relating to certain dates, the variables of questionnaire sets filled by about 300 enterprises (detailed distribution in Figure 12) are included which allow to create and describe subsamples based different firm features (e.g. size, property structure) (Chikán and Czakó, 2005).

**FIGURE 12:** Sample size of the single surveys



*Source of data: Calculated values based on VKK CEO databases 1996-2009*

The in 1996, 1999 and 2004 surveyed firms are representative according to size categories for middle-size and big firms. Related to the property structure firms in public and foreign property are over- while firms in domestic property are underrepresented. Based on territorial position enterprises in Budapest and Pest county are at a lower proportion in the database, but firms from other regions have a higher proportion in the sample than in the population (Lesi, 2005). Related to the sample in 2009 the leading researchers of the “In Global Competition” program don’t underline the representativeness of the sample, but they emphasize its certain characteristics (Chikán et al, 2010):

- 3.8% of the general partnerships with more than 10 employees operating in Hungary in 2009 belong to the big firm category with employees above 250 people; 13.2% operate with more than 50 but less than 250 employees; and 83% can be classified as small business. Based on this the sample is overrepresented in the middle-size (65.6%) and big firm categories (15.2%), while it is underrepresented in the small business category (19.2%). Compared to the survey in 2004 the proportion of small businesses has increased significantly, the proportion of the middle-sized increased mildly while the proportion of big firms decreased. So the sample examined by size has come closer to the proportions in the population, but the middle-size and big firms are still overrepresented.

- On the basis of revenue and assets categories the KSH doesn't report distribution data proper for comparison, however compared to the earlier survey the proportion of micro and small businesses decreased almost by 14 %, they are almost entirely substituted by middle-size firms, while the proportion of big enterprises changed scarcely. The distribution of firms included in the survey is similar to the proportions in 2004 based on both assets and revenue, except firms in the largest category.
- According to the industrial distribution the sample is different from the composition of the Hungarian Ltd-s, Plc-s and co-operatives in that it contains proportionally more enterprises from the manufacturing industry at an expense of trade, service and community service industries.
- At firms included in the sample 5.6% of the entire property is in governmental, 16.2% is in foreign and 65.4% is in domestic property. The share proportion of local authorities is similar to the state's and foreign individuals'.
- The sample contains at a smaller rate firms in Budapest and Pest County (Middle-Hungary), than the population, similar to firms in Lowland. A smaller part of firms in Transdanubia gave information. North-Hungary is mildly overrepresented in the database, but not at a similar scale as the Lowland region.

On the whole the composition of the samples of the 4 surveys according to industries is the similar to the composition of the Hungarian firms with a number above 50 employees, however the samples in 2004 and 2009 contain firms from the manufacturing, energy and community service industry in a higher proportion, and organisations from trade, construction industry and non-community service sector are underrepresented.

In papers which compare industries there is a need for the checking measuring evenness, since the relative importance of starting and operating businesses alters from industry to industry significantly (for example the small business rate is higher in the service sector than in the manufacturing industry). There is a further problem with employment changes, since the taxation considerations can distort the unemployment and self employment ratio. A similar reliability problem occurs in relation to the usage of the balance-sheet footing and the profit. Finally the characteristics of the industries have to be checked, because manufacturing industries are more capital-intensive, and service industries need more (Hortoványi, 2008).

The sample introduction of the single surveys is discussed in flash reports (Czakó et al, 1999, Chikán et al, 2004 and 2010), and certain papers (Lesi, 2005, Wimmer and Csesznák, 2005, Könczöl 2007) in details, further on I introduce the characteristics of the collective sample of the 4 surveys in details.

### **3.3.3 Characteristics of the collective sample, introduction of control/descriptive variables**

I examine the collective sample of the 4 surveys by firm size, export activity, majority owner, industry and geographical position. The firm size is examined by number of staff, assets and revenue, because these are the basic firm size descriptive in the most entrepreneur researches (Davidsson, 2004).

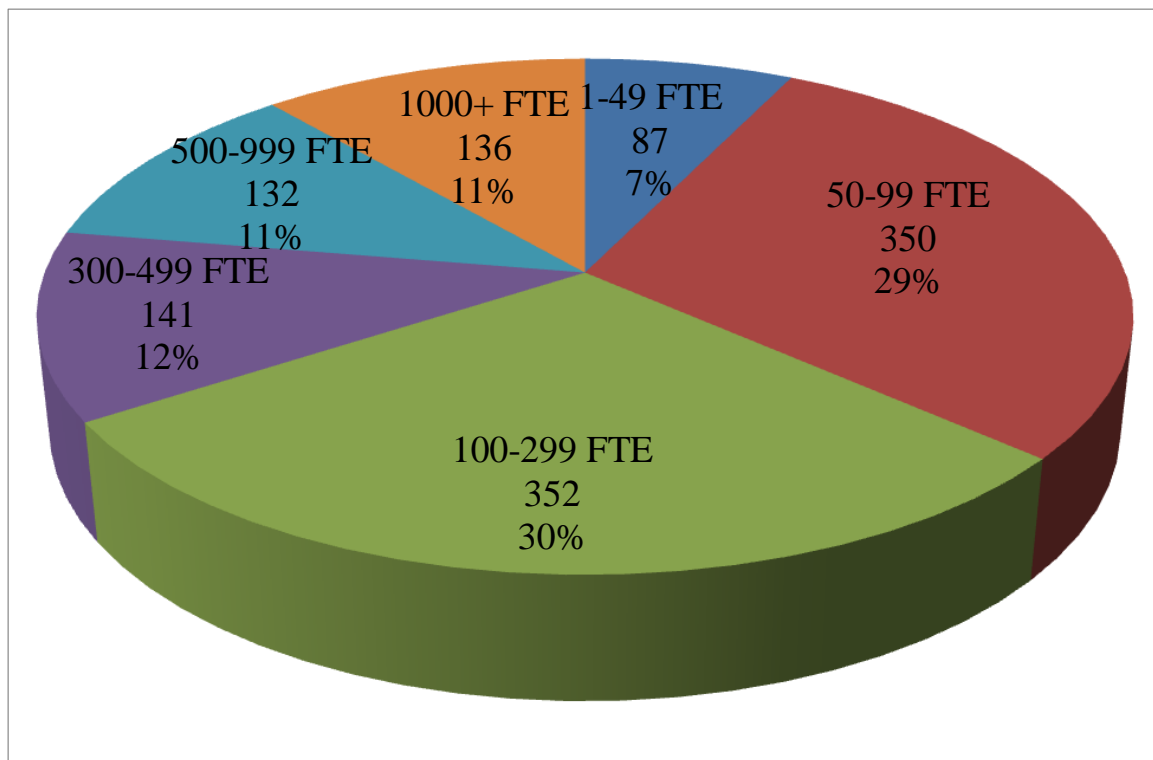
At the comparison of the single databases I experienced that the number of staff, assets and revenue were questioned at the surveys in 1999, 2004 and 2009 as an accurate value, so they are continuous variables, while at the first survey in 1996 categories were used. So I came to a decision point, whereas:

- A. I leave out the survey in 1996
- B. The categorical variables of the survey in 1996 I recode to ratio/interval scale (e.g.: replacement with category centres)
- C. I recode the continuous variables of the following 3 survey into categorical variables

I decided on using solution C, because this is a monotonous transformation with low distortion and the results of each survey can be interpreted. At creating the categories I take the categories in 1996 for starting point, which although doesn't match the later EU and Hungarian legislation at separating small and middle-size businesses, it is in a better harmony with the Anglo-Saxon researches which serve as a base of the competitiveness researches. Figure 13 illustrates the distribution of the sample by number of staff categories in details.



**FIGURE 13:** Size by Full-time employment (FTE) categories



*Source of data: Calculated values based on VKK CEO databases 1996-2009*

Three-fifth of the sample is from firms with a staff number between 50 and 300, so the ratio of middle-size enterprises is dominant. Besides firms with above 300 employees are one-third of the sample, and below 50 employees there are only 87 firms from the 1198 respondents.

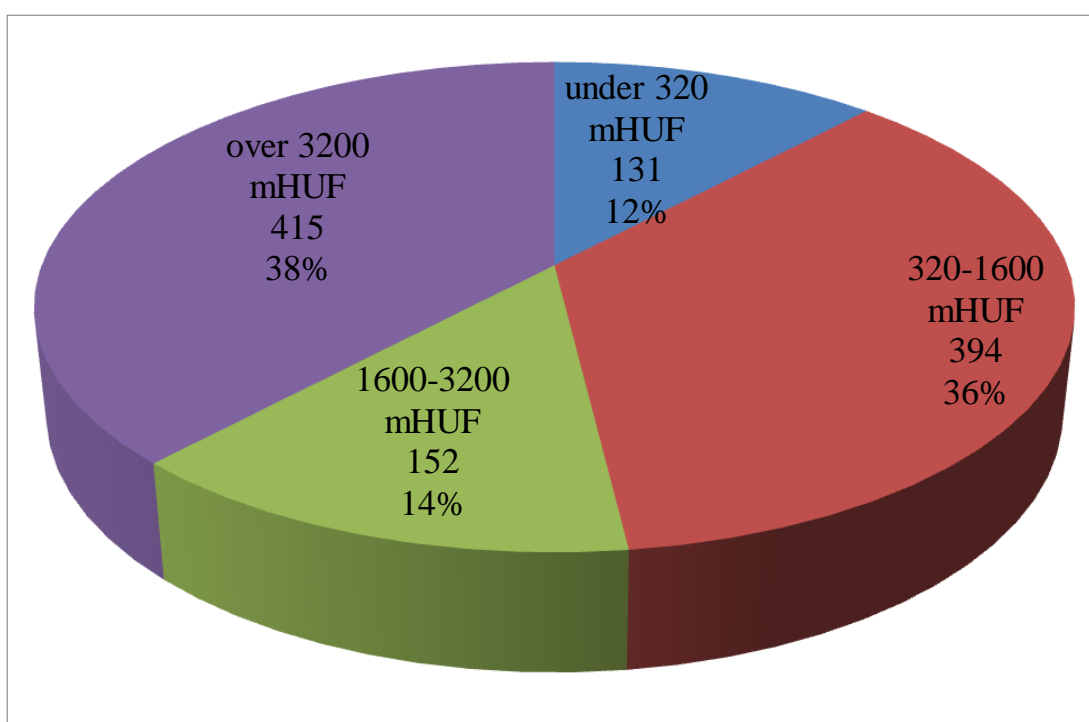
At the assets and revenue categories the time value of money is a further problem. According to this I converted every data to the price level at 31<sup>st</sup> December 2008 based on the MNB (2010) consumer price level changes (appendix 6.1.). So the categories in 1996 have also changed (320.1311% is the consumer price level at the end of 2008 instead of the end 1995), namely (in order to simplicity round to ten million Ft, but the coding happened based on the accurate data):

- below 100 mHUF instead below 320mHUF
- between 100 mHUF and 500 mHUF instead between 320mHUF and 1600mHUF
- between 500 mHUF and 1000 mHUF instead between 1600 mHUF and 3200 mHUF, and
- above 1000 mHUF instead above 3200 mHUF.

In relation to the data I had to pay attention not only to the recoding, but also to that only the data of the survey in 2004 were corrected from the 3 following surveys. Significant proportion of the data in the other two surveys was in million Ft instead of thousand Ft, so these have to be corrected before recoding.

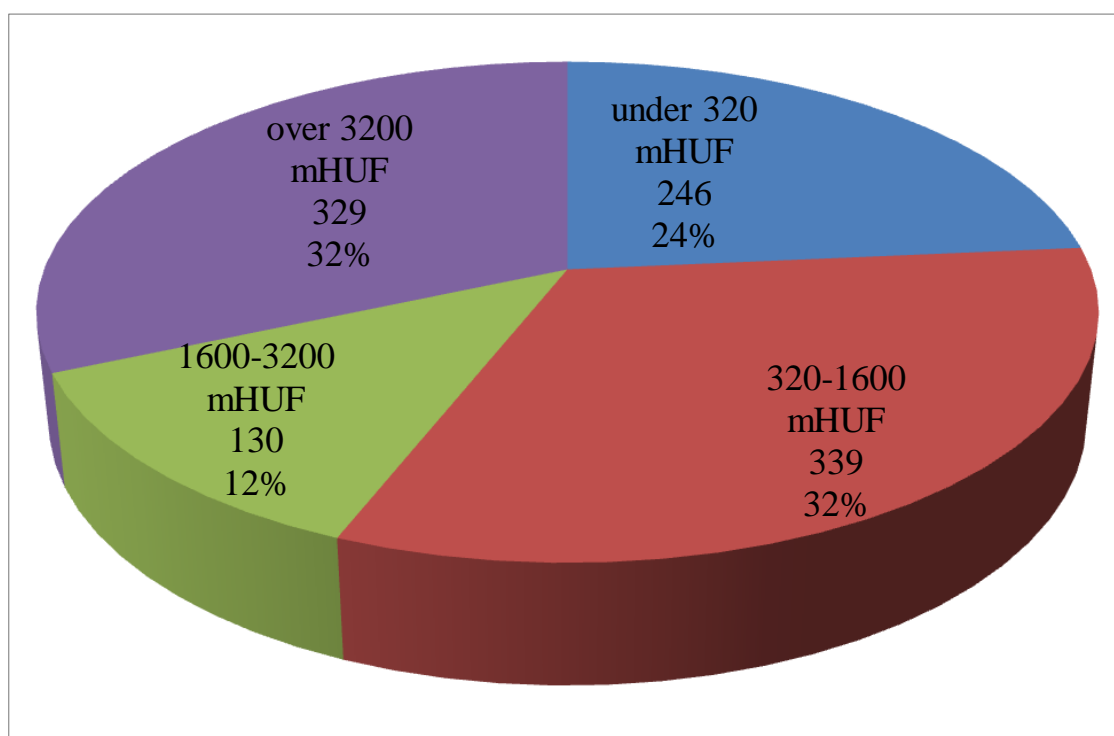
After data cleaning and recoding the distributions of the sample by revenue and assets were evolved, which are introduced in Figures 14 and 15. Examining the connections between assets and revenue it can be stated that there is a positive strong significant relation between the two categories (Spearman  $\rho$  value is 0.794, confidence is above 99%). Besides it is typical that the assets are bigger than the revenue.

**FIGURE 14:** Size by revenue categories (at price levels on 2008. 12. 31.)



*Source of data: Calculated values based on VKK CEO databases 1996-2009*

**FIGURE 15:** Size by assets categories (at price levels on 2008. 12. 31.)



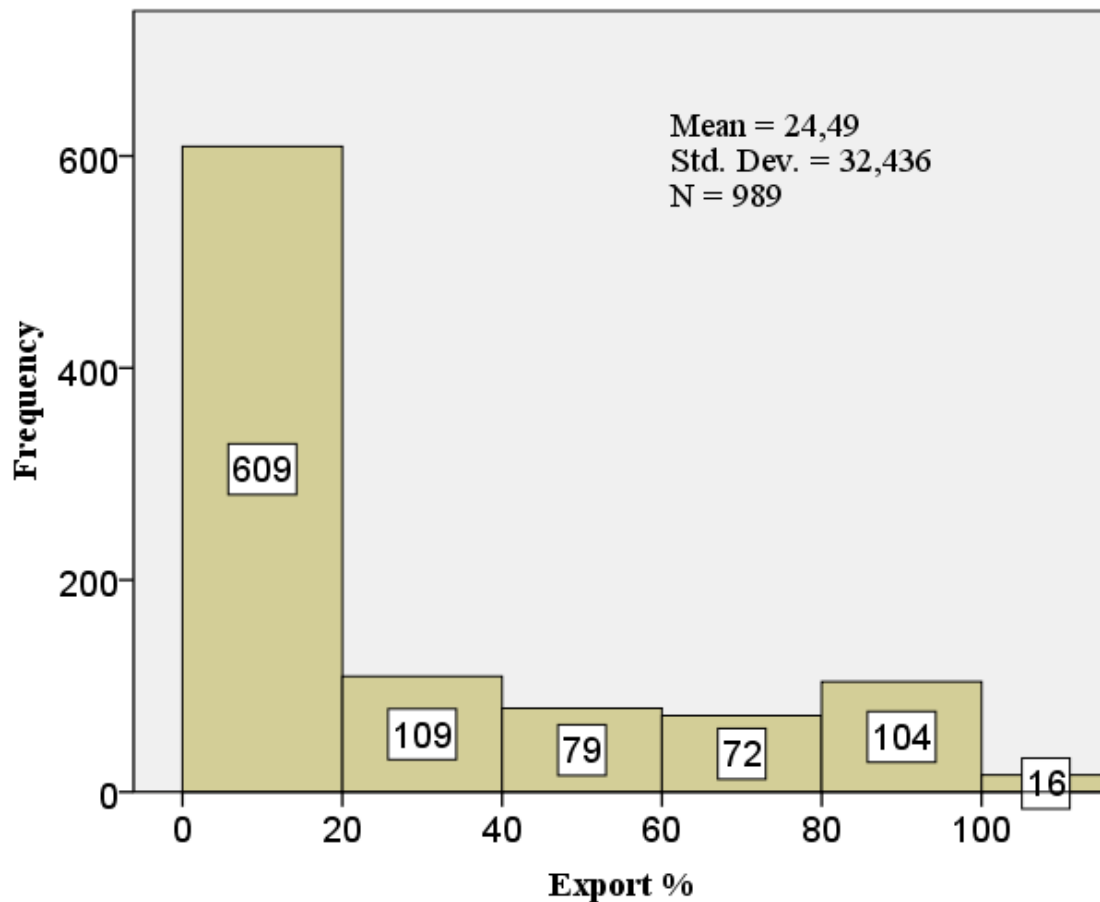
*Source of data: Calculated values based on VKK CEO databases 1996-2009*

Besides the “classic” size descriptive export orientation of the firm refers to further firm features. The export orientation is measured on interval scale in the course of each survey, namely: revenue from export included lease work expressed as a percentage of the revenue.

According to the entire sample there is an answer to export orientation in 989 cases, from which in 391 cases export lacks entirely (0% export). The average export rate is 24.5 %, which doesn’t characterize the population well, this is also illustrated by the high standard deviation (32.4), and the histogram made based on the answers (Figure 6.).

There are only 16 firms in the sample which possess revenue only from export (included lease work), but there are already 104 cases, in which the revenue from export is above 80%.

**FIGURE 16:** The distribution of the sample by export rate



*Source of data: Calculated values based on VKK CEO databases 1996-2009*

To characterize the owners of the firms were classified by property structure and the ownership proportion of different property groups. The signals changed through the single surveys, which are summarized in Table 9. At the single owners the proper ratio had to be given in 1996, 1999 and 2004. To 2009 the variable has changed and the dominant owner was signed directly, instead of the division of 100% among the single owners.

For the classification I followed the methodology of Wimmer and Csesznák (2005), I made by reduction ownership categories: (1) state, (2) domestic individual and (3) foreign ownership. At the classification it caused problems, that at the former 3 surveys at some firms the sum of the given ownership proportions were bigger or smaller than 100%. It has to be marked that related to the surveys in 1996, 1999 and 2004 the examined categories don't show if the firm has a dominant owner or how many owner possess the organisation. Belonging to a certain firm category show what type of owner possesses the majority of the enterprise, if there is such a characteristic form. I ranked a certain firm into one of the ownership categories if the summed share of the examined types exceeds the 50%.

**TABLE 9:** Categories pertaining to the present major proprietor of the firm

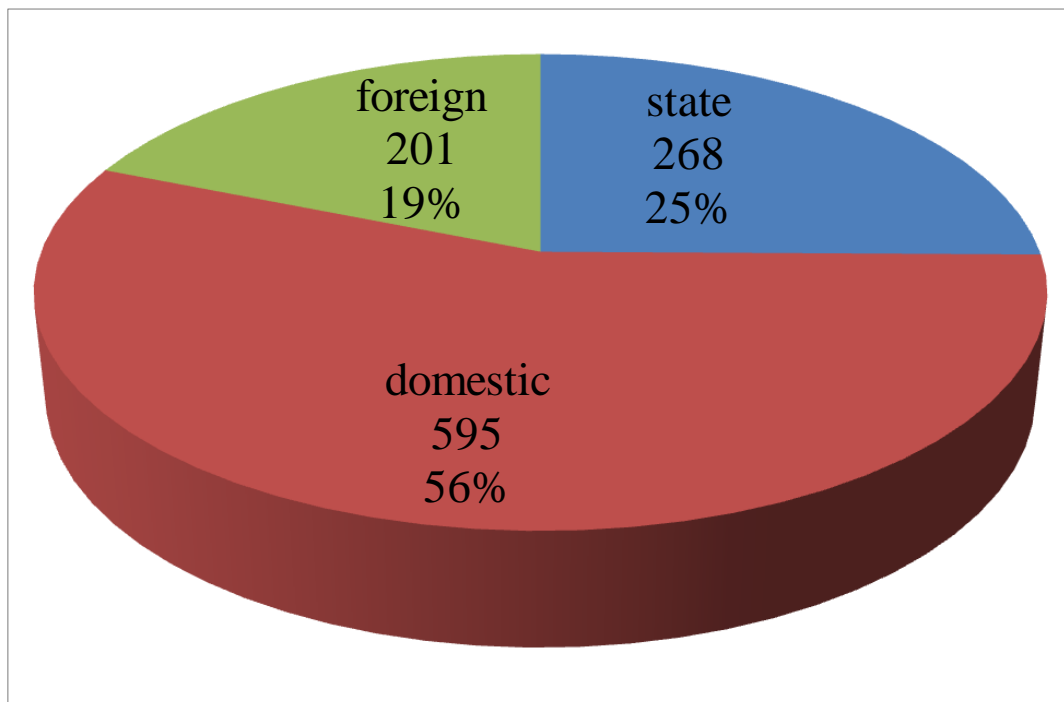
1996	1999	2004	2009
a) state	a) the Hungarian state (e.g. National Asset Management Agency, ministry)	a) the Hungarian state (e.g. National Asset Management Agency, ministry)	a) the Hungarian state (e.g. National Asset Management Agency, ministry)
b) foreign firms	b) majority state-owned (50%+1 vote) domestic firm	b) majority state-owned (50%+1 vote) domestic firm	b) majority state-owned domestic firm
c) foreign financial institutions	c) local government	c) local government	c) local government
d) foreign private equity	d) foreign financial owner	d) foreign financial owner	d) domestic private person
e) domestic private equity	e) foreign professional owner	e) foreign professional owner	e) foreign private person
- included: MRP management	f) domestic financial owner	f) domestic financial owner	f) foreign firm
f) state-owned domestic firms	g) domestic, private person and private-owned company outside the firm	g) domestic, private person and private-owned company outside the firm	g) other
g) domestic financial institutions	h) private person inside the firm (without the following two categories)	h) private person inside the firm (without the following two categories)	
h) local government	i) MRP	i) MRP	
i) other	j) management	j) management	
	k) other	k) other	

*Source of data: VKK CEO questionnaires 1996-2009*

Through the recoding the majority state-owned category was made of the responses in 1996 a) and h), in 1999, 2004 and 2009 a), b) and c). The domestic majority ownership was computed from responses in 1996 e), f) and g), in 1999 and 2004 f), g), h), i) and j), and in 2009 d). The foreign majority ownership was calculated from the remaining but not other responses.

The distribution of the majority ownership categories within the sample is shown in Figure 17. Firms with domestic majority property are dominated (56%) in the collective database of the 4 surveys, while the proportions of firms in state (25%) and foreign majority ownership (19%) are similar (Figure 17.). In the database in 176 cases there is no information about the majority owner, or there is no majority owner or the respondent signed the other category.

**FIGURE 17:** The distribution of the sample by the type of the majority proprietor



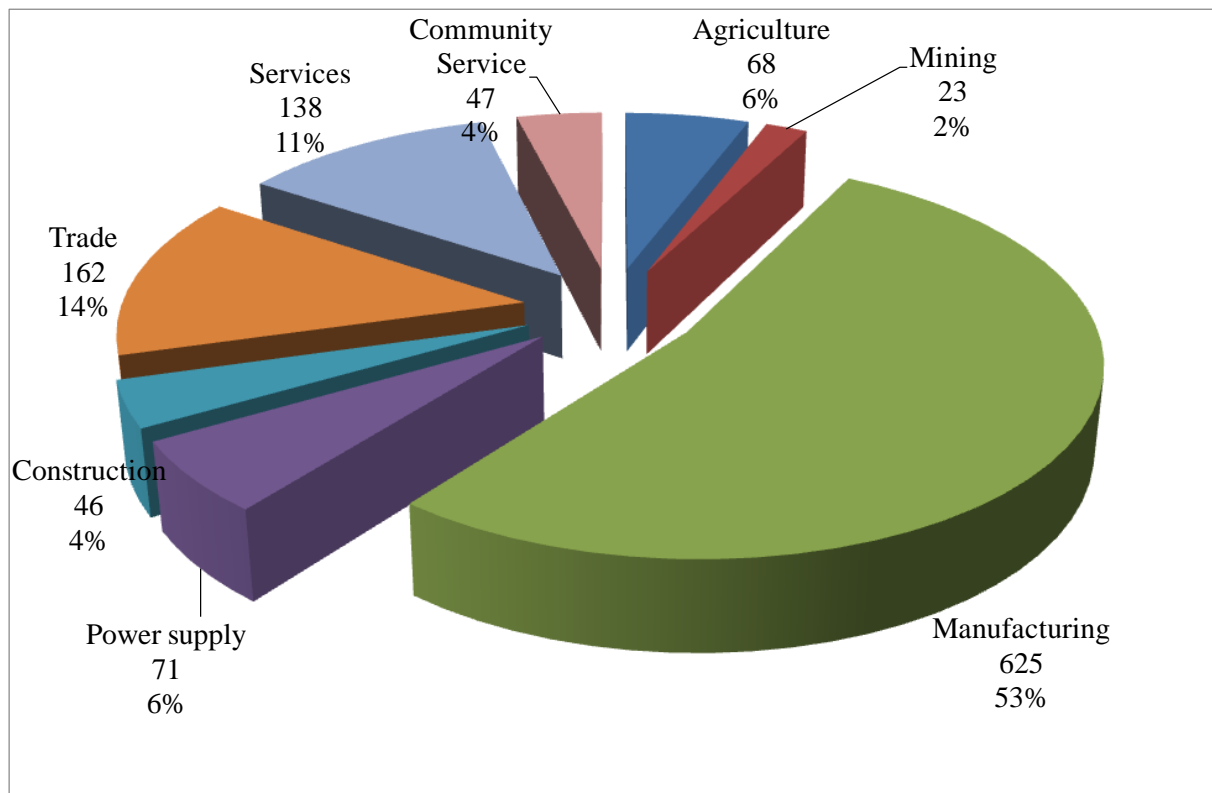
*Source of data: Calculated values based on VKK CEO databases 1996-2009*

It is worth examining beyond the ownership background the main activity of the firms. I had difficulties because the databases of the different surveys contain different classifications. Related to this the database from 1996 is the most simple, while the respondent had to choose from 7 opportunities. After this they had to sign the 3 most important scopes of activities.

I made up the industrial classification by using the methodology of Wimmer and Csesznák (2005), based on the categories of the sample in 2004. I recoded the existing TEÁOR (I used versions from '98 and '08) numbers into 8 categories in case of the samples in 1999 and 2009, in case of the sample in 1996 I matched clearly the 7 categories to the uniform categories. Based on this the clearly classification of the sample elements has evolved, which distribution is illustrated in Figure 18.

There are firms from the manufacturing industry (53%) in majority in the sample, but there is enough service enterprise in the sample which enables to compare industries of different basic characters. Beyond the classification of the sample along main activity, it is also a suitable field to research the territorial positions of the headquarters of the enterprises.

**FIGURE 18:** The distribution of the sample by the main line of business

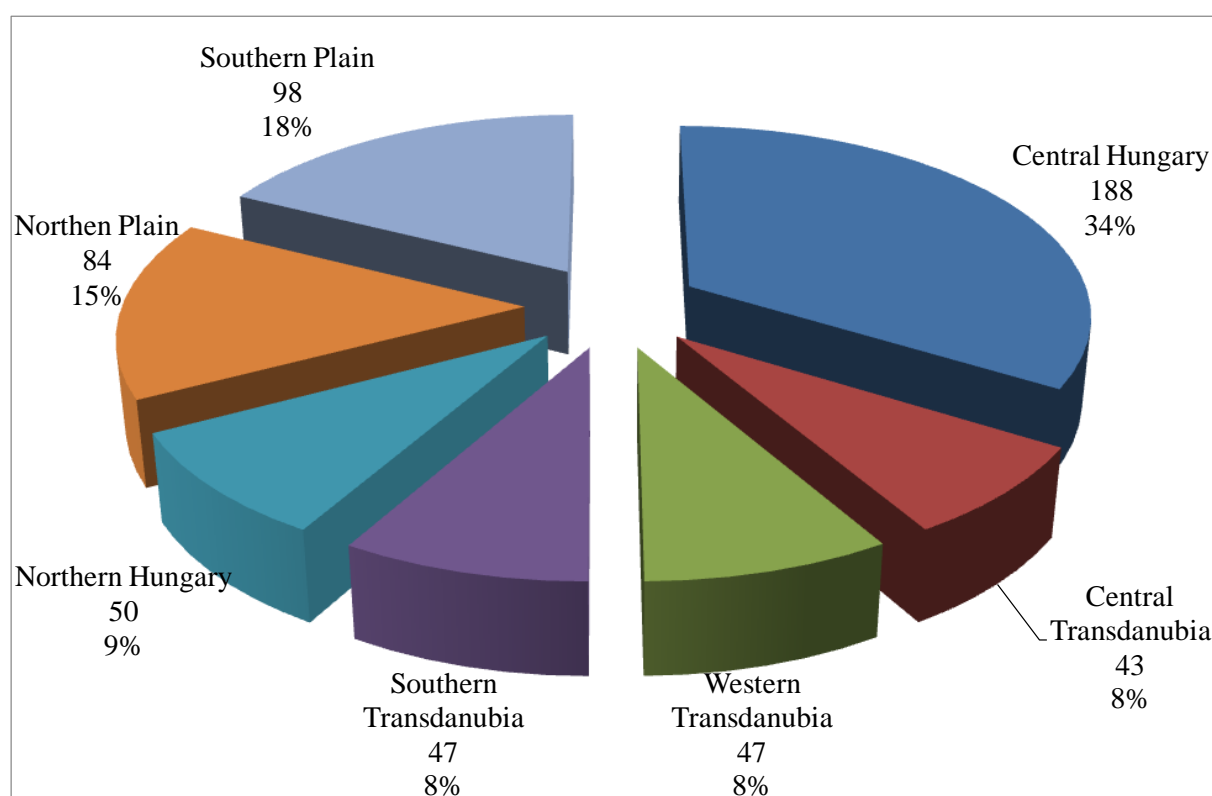


*Source of data: Calculated values based on VKK CEO databases 1996-2009*

In the for research given databases of the competitiveness research in 1996, 1999 and 2004 don't include the a7 variable of the CEO questionnaire, which contain the settling name of the most important plantation of the firm. There is a 'region' variable in the database in 2004, which I form from the database in 2009 as similar to. The collective sample contains the results of the two surveys, which I can use further on as a control variable only limited.

Figure 19 shows the territorial distribution of the latter two surveys. Based on this it can be stated that Lowland regions are somewhat overrepresented, but the numbers of sample elements are enough at each region in order to carry out territorial comparisons.

**FIGURE 19:** The distribution of the sample by territorial position



*Source of data: Calculated values based on VKK CEO databases 1996-2009*

To sum it up the foregoing in this chapter it can be determined that the research of the examined problem is attainable with the databases of the “In Global Competition” research. In this chapter I determined the research methodology and the sample characteristics in details. After the explanation of the theoretical and methodological scopes I come to the introduction of the examination results.

In the next chapter the results of the quantitative research will be introduced. The summary, the interpretation and the wider arrangement in the literature of the results are coming in the chapter afterwards.



## 4 RESULTS OF THE EMPIRICAL EXAMINATIONS

### 4.1 *Environmental uncertainty*

#### 4.1.1 The concrete appearance of the variable in the VKK database

There is a concrete question referring to the assessment of environmental uncertainty in the competitiveness research program. The question was at the beginning among the questions raised to the CEOs. In 1996 and in 2009 it was v4, and in 1999 and 2004 it was the question with the sign v3:

V3/V4. Sign, that the changes in the different territories of the environment, which forms the firm operation's condition system, in what degree they are a source of uncertainty before 3-4 years related to strategic decision making, and in what degree they are a source of uncertainty nowadays?

1=the certain territory is not a source of uncertainty

2=the certain territory is in small measure a source of uncertainty

3=the certain territory is in average measure a source of uncertainty

4=the certain territory is in large measure a source of uncertainty

5= the certain territory is in extraordinarily large measure a source of uncertainty

	Past					Present				
a) Foreign sales market environment	1	2	3	4	5	1	2	3	4	5
b) Domestic sales market environment	1	2	3	4	5	1	2	3	4	5
c) Capital and financial market changes	1	2	3	4	5	1	2	3	4	5
d) Foreign suppliers	1	2	3	4	5	1	2	3	4	5
e) Domestic suppliers	1	2	3	4	5	1	2	3	4	5
f) Technological development	1	2	3	4	5	1	2	3	4	5
g) Legislation	1	2	3	4	5	1	2	3	4	5
h) Social changes	1	2	3	4	5	1	2	3	4	5
i) Domestic political changes	1	2	3	4	5	1	2	3	4	5

The responses to the subquestions were encoded at a 5 graded ordinal scale.

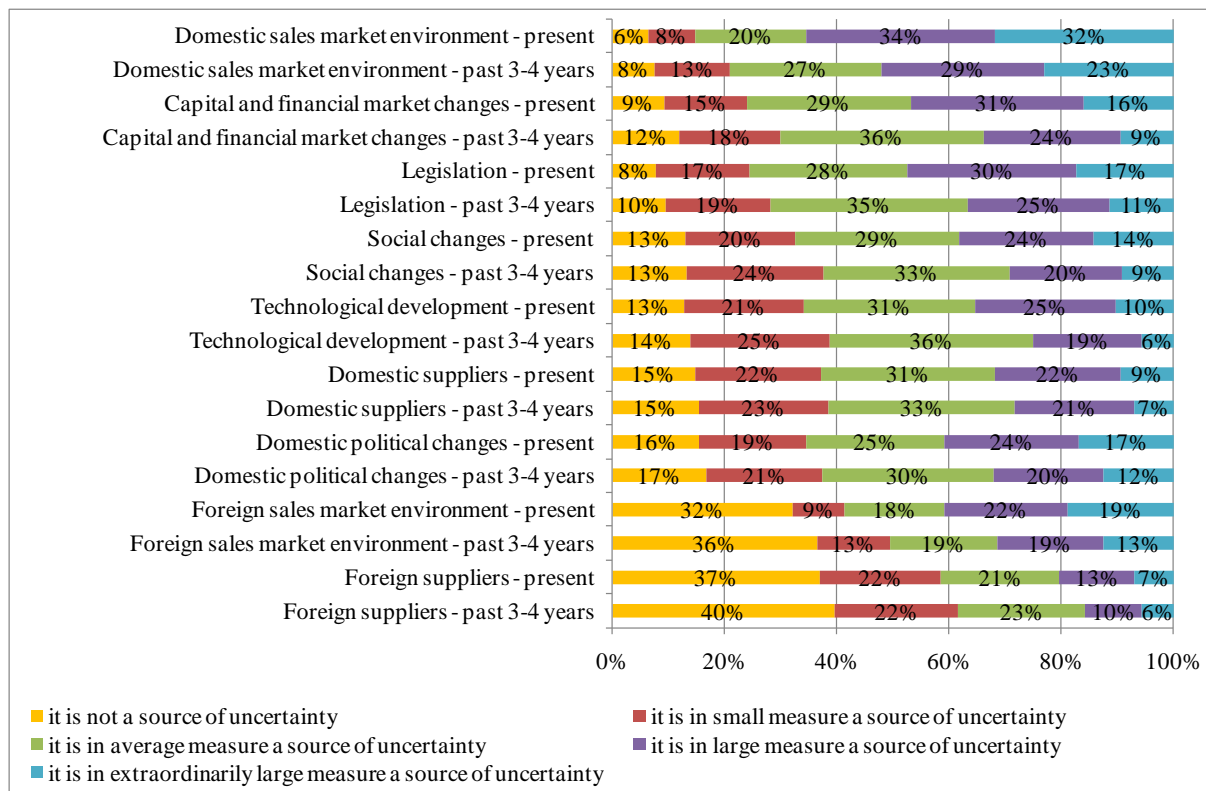
The responses to the question from a) to i) were the same during the years.

#### 4.1.2 Characteristics and description of the variable

Considering the responses of the last two decades together, the domestic market meant for the enterprises the biggest environmental uncertainty, which was typically in large and in extraordinarily large measure a source of uncertainty. The capital and financial market changes and the unpredictability of legislation can also be reckoned as significant sources of environmental uncertainty.

The social changes, the technological development, the domestic suppliers and the domestic political changes were in the summary of the last 4 surveys in average measure sources of environmental uncertainty. On the contrary the foreign markets and foreign suppliers were in a small measure sources of uncertainty. Figure 20 contains the details of the answers referred to the environmental uncertainty.

**FIGURE 20:** Sources of uncertainty



*Source of data: Calculated values based on VKK CEO databases 1996-2009*

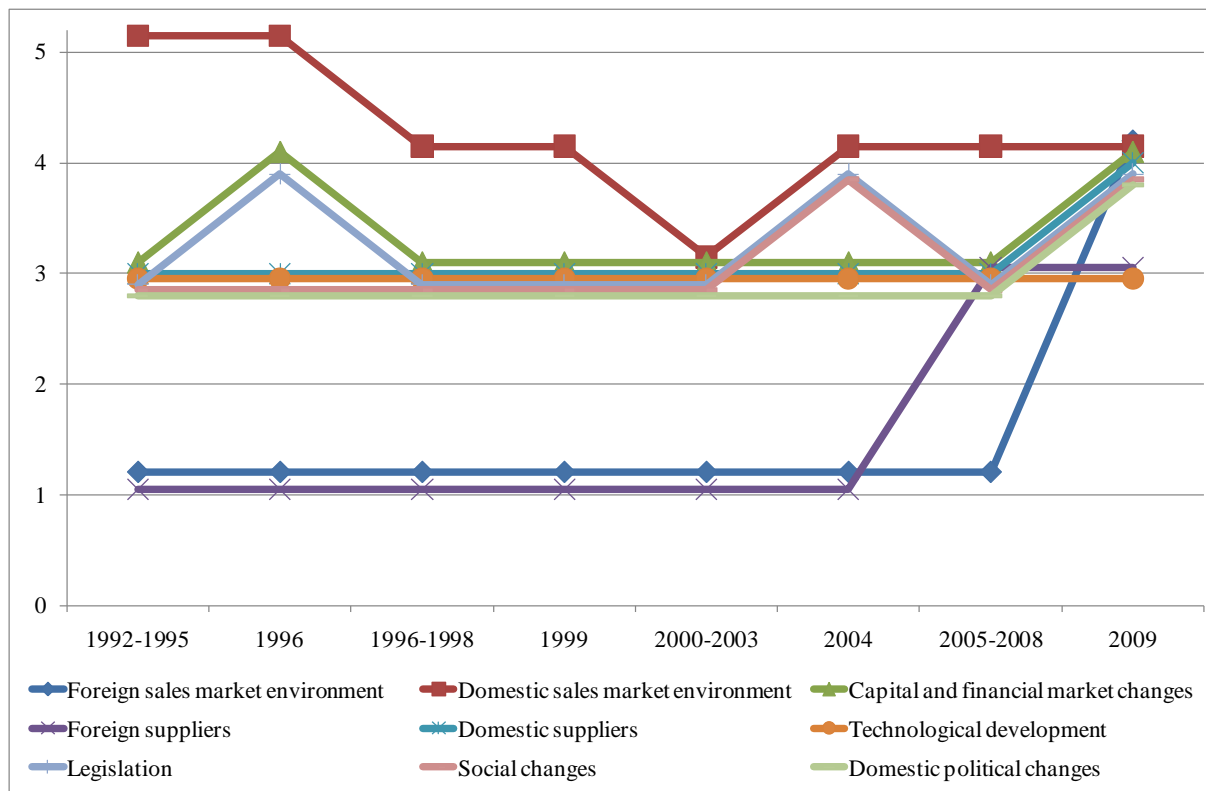
After the summarized interpretation it is worth examining the temporal development of environmental uncertainty too. Within it I discuss in detail the separation of two effects: (1) through the single surveys which value was the most frequent answer (mode), and (2) how much the respondent takes the environment in the present as more uncertain than the past.

#### 4.1.3 The evolution of the assessment uncertainty through the surveys

Through the examination of the temporal development of uncertainty I analyze the evolution of the single factors' most frequent responses (mode), because this is the appropriate method in order to compare the central tendency of the variables measured on ordinal scale.

To demonstrate the temporal development I interpreted from 1-1 survey 2-2 variables, whereas the values in 1996, 1999, 2004 and 2009 are concerned to the present responses of the given survey, and the inter-values are referred to the past responses of the given survey. Figure 21 demonstrates this temporal development.

**FIGURE 21:** Changes in sources of uncertainty



Interpretation of Y axis with words: 1 It is not a source of uncertainty, 2 It is in small measure a source of uncertainty, 3 It is in average measure a source of uncertainty, 4 It is in large measure a source of uncertainty, 5 It is in extraordinarily large measure a source of uncertainty

Remark: Modes can be only integer, I separated the modes of the variables for the purpose of illustration.

*Source of data: Calculated values based on VKK CEO databases 1996-2009*

We can make interesting discovery compared Figure 21 to Figure 20:

- The uncertainty of the domestic markets is a significant risk factor during the whole examined period, which however shows in the first decade a decreasing tendency, stands from the EU accession at an unchanged level.
- In contradiction to the domestic markets the foreign markets and suppliers meant small environmental uncertainty in the first three-quarters of the period, but in the last years the uncertainty arising from them has significantly increased In connection with the crisis and partly also before it, they have become from a group with small risk a factor with average and great risk.
- The crisis has brought along not only the perception of the growing uncertainty from the foreign markets and suppliers, but – except the technological development and the just the same high domestic markets– it has increased the values of all factors.

It is a further observation that the perception of uncertainty from the capital and financial market changes and legislation in the survey 1996 and from domestic markets, legislation and social changes in the survey 2004 is greater than the perception of uncertainty referred to the previous 3-4 years before the certain surveys.

Did the uncertainty grow truly or is it just a perception error? Do we evaluate the past as less uncertain than the present?

#### 4.1.4 Do we estimate the past less uncertain than the present?

**TABLE 10:** Relation between the judgment of present and past

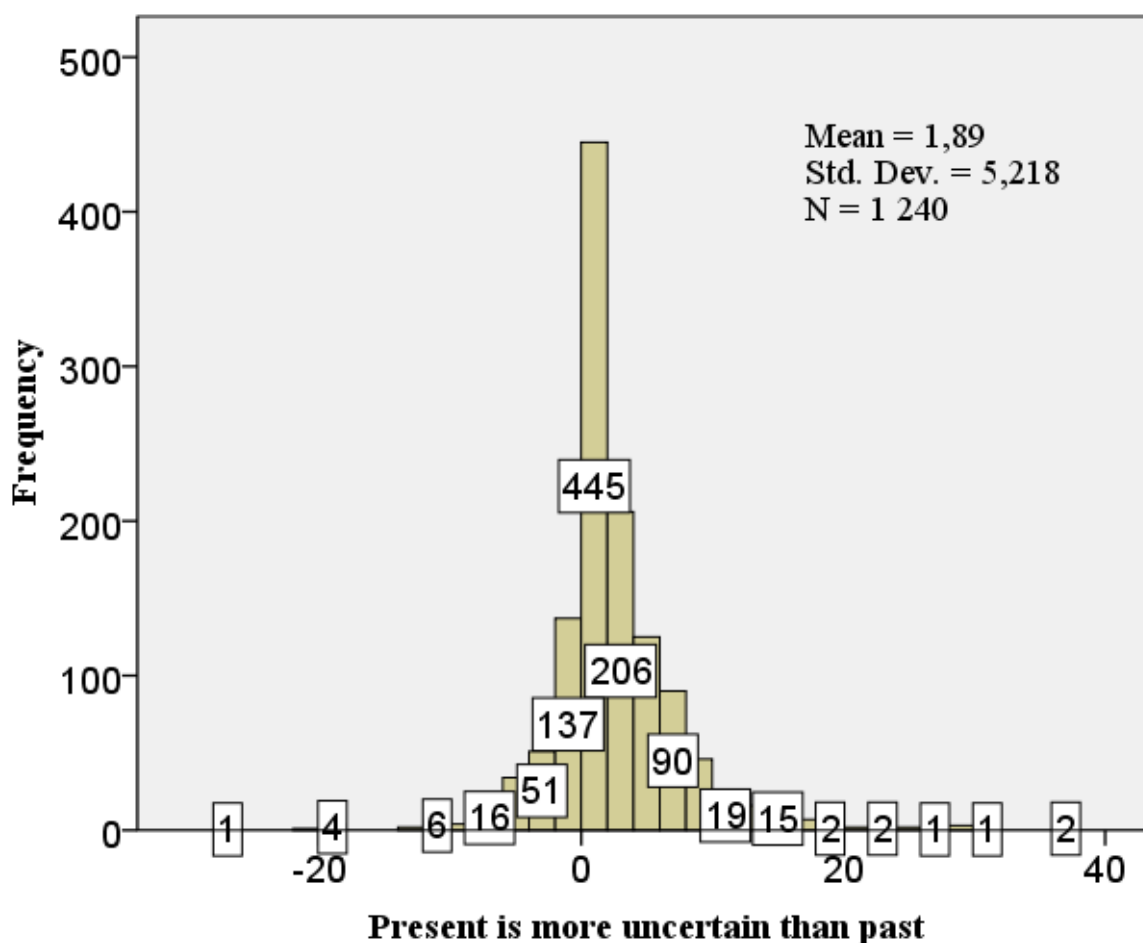
Source of uncertainty	Relation between the judgment of present and past		
	Spearman $\rho$ value	significance	N
Foreign sales market environment	0,800	0,000	1142
Domestic sales market environment	0,634	0,000	1171
Capital and financial market changes	0,634	0,000	1151
Foreign suppliers	0,835	0,000	1128
Domestic suppliers	0,731	0,000	1158
Technological development	0,750	0,000	1152
Legislation	0,686	0,000	1164
Social changes	0,664	0,000	1159
Domestic political changes	0,664	0,000	1156

*Source of data: Calculated values based on VKK CEO databases 1996-2009*

To answer the question I made further examinations. Firstly I analyzed if the variables of the past and of the present are in connection with each other or not. To settle this I counted Spearman  $\rho$  (rho) values, whose result is summed up in Table 10. As the Table shows it well, there is strong positive significant connection between the past and present judgment of the factors.

After this finding I calculated that in case of the single observational units how big is the deviation between the uncertainty judgments referring to the present and past state. I summed up the deviations observational unit by unit, and then I plotted their distribution with a histogram (Figure 22).

**FIGURE 22:** How much do we perceive the present more uncertain than the past?



Interpretation of 1 unit: In case of the 9 potential factors the respondent valued in one instance the environment with one grade more uncertain at the moment of the response than 3-4 years ago. So, if a respondent signed the past uncertainty small in case of every factor and the present one extraordinarily large, the value of the scale will be 36, and in reversed case -36.

*Source of data: Calculated values based on VKK CEO database 1996-2009*

Figure 22 shows with the introduced connections in Table 10 well that the perception of the past and present uncertainty is interdependent. At third part of the managers (445) for the manager the level of uncertainty coming from all resultants doesn't differ in the present and in the last 3-4 years.

Besides, in average the uncertainty is in a small measure higher in the present than in the past which is marked by the mean: 1.89 and standard deviation: 5.218. We get similar distributions by examining the phenomenon along yearly subsamples which are in appendix 6.2. in details. The deviation on the average in 1996 was 2.29, in 1999 was 1.95, in 2004 was 1.76, and in 2009 was 2.48, according to that the present is more uncertain than the past.

The standard deviation value alters form year to year, its values is in 2004 the lowest (3.906), and in 1996 the highest (6.318) (In 1999 the standard deviation value is 4.83, in 2009 it is 5.306).

On the whole the perception of the past uncertainty was at every survey higher than the perception of present uncertainty; however its degree is low, so it doesn't distort basically the uncertainty perception of the inter-periods.

#### **4.1.5 Control variable's relation to the variable**

At 99.99% confidence level the perception of the environmental uncertainty is independent from the organisation size variables according to number of staff, assets and revenue. Beyond this, there is no provable connection between the territorial position (region) and perception of uncertainty.

There is a provable significant connection at 99.99% level between the export orientation and the perception of several factors of the environmental uncertainty, namely:

- for enterprises with higher export rate the foreign market environment means a more significant uncertainty factor (Spearman  $\rho$  value is 0.581 for the past and 0.547 for the present)
- for enterprises with higher export rate the domestic sales environment means a lower uncertainty factor (Spearman  $\rho$  value is -0.169 for the past and -0.257 for the present)
- for enterprises with higher export rate the foreign suppliers mean a more significant uncertainty factor (Spearman  $\rho$  value is 0.245 for the past and 0.213 for the present)
- for enterprises with higher export rate the domestic suppliers mean a lower uncertainty factor (Spearman  $\rho$  value is -0.112 for the past (99.9% confidence level) and -0.160 for the present)
- for enterprises with higher export rate the perception of uncertainty from legislation and social changes is lower in the present (Spearman  $\rho$  value is -0.165 for the and -0.200 both for the present)
- The uncertainty from the domestic political changes affects enterprises with higher export rate less (Spearman  $\rho$  value is -0.144 for the past and -0.227 for the present)

The type of the majority owner is in connection with several environmental uncertainty factors. The type of the owner is a categorical (nominal) variable, so I analyzed the relations with crosstabs and  $\phi$  (phi) value. There is a connection at 99.9% confidence level between the type of the owner and:

- the foreign sales market environment ( $\phi_{\text{past}}=0.240$ ,  $\phi_{\text{present}}=0.241$ ). Typically firms in majority state property take the foreign markets for a source of uncertainty not or in small measure (65.8% past, 58.4% present); on the contrary enterprises in majority foreign property take them for a source of uncertainty in large or extraordinarily large measure (42.6% past, 52.9% present). The opinion of firms in majority domestic property is between these two.
- the present evaluation of the domestic sales environment ( $\phi_{\text{present}}=0.183$ ). The state-owned firms reckon the domestic markets as a great or extremely great uncertainty factor (63.2%) as well as enterprises in majority domestic property (69.3%). Enterprises in majority foreign property take domestic markets for less an uncertainty factor.
- the past uncertainty of the capital and financial market changes ( $\phi_{\text{past}}=0.221$ ). Firms in private ownership were influenced to a larger extent through the uncertainty from the capital and financial markets than state-owned firms.
- the foreign suppliers ( $\phi_{\text{past}}=0.261$ ,  $\phi_{\text{present}}=0.249$ ). For the majority of the state-owned organisations foreign suppliers didn't mean (92.7%) and don't mean (90.5%) an uncertainty factor above the average, while for domestic and foreign firms is this group more uncertain, but the proportion of the group with high or extremely high uncertainty is also not bigger than 25%.

The main activity of the enterprises and certain sources of environmental uncertainty are also not independent from each other. We can state at 99.9% confidence that there is a connection between the main activity of the firm and:

- the perception of foreign sales environmental uncertainty ( $\phi_{\text{past}}=0.410$ ,  $\phi_{\text{present}}=0.411$ ). The uncertainty factor is of a low degree in the extractive industry, energy industry construction industry, trade, services and in community services. It is average or high in agriculture and manufacturing industry.
- the domestic market sales environment at the time of the surveys ( $\phi_{\text{present}}=0.248$ ). The uncertainty factor is high or extremely high in agriculture, manufacturing industry, construction industry, trade, service and community services. In the extractive industry and energy industry the domestic market environment is a source of uncertainty in an average measure.
- the perception of uncertainty from capital and financial markets in the past ( $\phi_{\text{past}}=0.273$ ). The perception of uncertainty is average or high in agriculture, manufacturing industry, and trade. It is average in the extractive industry, construction industry and average or low in case of services and community services and low in the energy industry.
- the uncertainty from foreign suppliers ( $\phi_{\text{past}}=0.293$ ,  $\phi_{\text{present}}=0.264$ ). Foreign suppliers are not or in a small measure a source of uncertainty in agriculture, extractive industry, energy industry, construction industry, services and community services. It is low or average in the manufacturing industry and trade.
- the domestic suppliers ( $\phi_{\text{past}}=0.250$ ,  $\phi_{\text{present}}=0.229$ ). Uncertainty from domestic suppliers is at an average degree in agriculture, extractive industry, manufacturing industry, construction industry and trade. It is at a low or average level in energy industry, service and community services.
- the uncertainty from legislation at the time of the surveys ( $\phi_{\text{present}}=0.240$ ). It is average or extremely high in agriculture, energy industry and trade. It is average or high in the manufacturing industry, construction industry, services and community services. There are no or just a low degree of uncertainty in the extractive industry.



## 4.2 The firm's relation to the environmental changes

### 4.2.1 The concrete appearance of the variable in the VKK database

The firm's relation to the environmental changes is measured by the questions v5 (1996, 1999 and 2009), and v4 (2004) of the CEO questionnaire.

V4/V5. Describe comprehensively, how your company set itself against the environmental changes in the period between 1992-1995/1995-1998/2000-2003/2005-2008. Which characterization does best describe the behaviour of the firm?

My enterprise in the period between 1992-1995/1995-1998/2000-2003/2005-2008

- a) recognized the major environmental changes always late ☐
- b) recognized the major environmental changes, but was not able to find the proper responses to the challenges ☐
- c) recognized the major environmental changes and followed typically a reactive strategy that responded to the environmental challenges afterwards ☐
- d) was usually able to forecast the major environmental changes, and followed preceding preparing on time behaviour ☐
- e) was usually able to forecast the major environmental changes, prepared itself for those in time and adapted itself to them with proper responses, it even endeavoured consciously to influence the environmental conditions ☐

The variables were encoded to dichotomy variables subquestions by subquestions.

The variable was in content the same during the years.

### 4.2.2 Characteristics and description of the variable

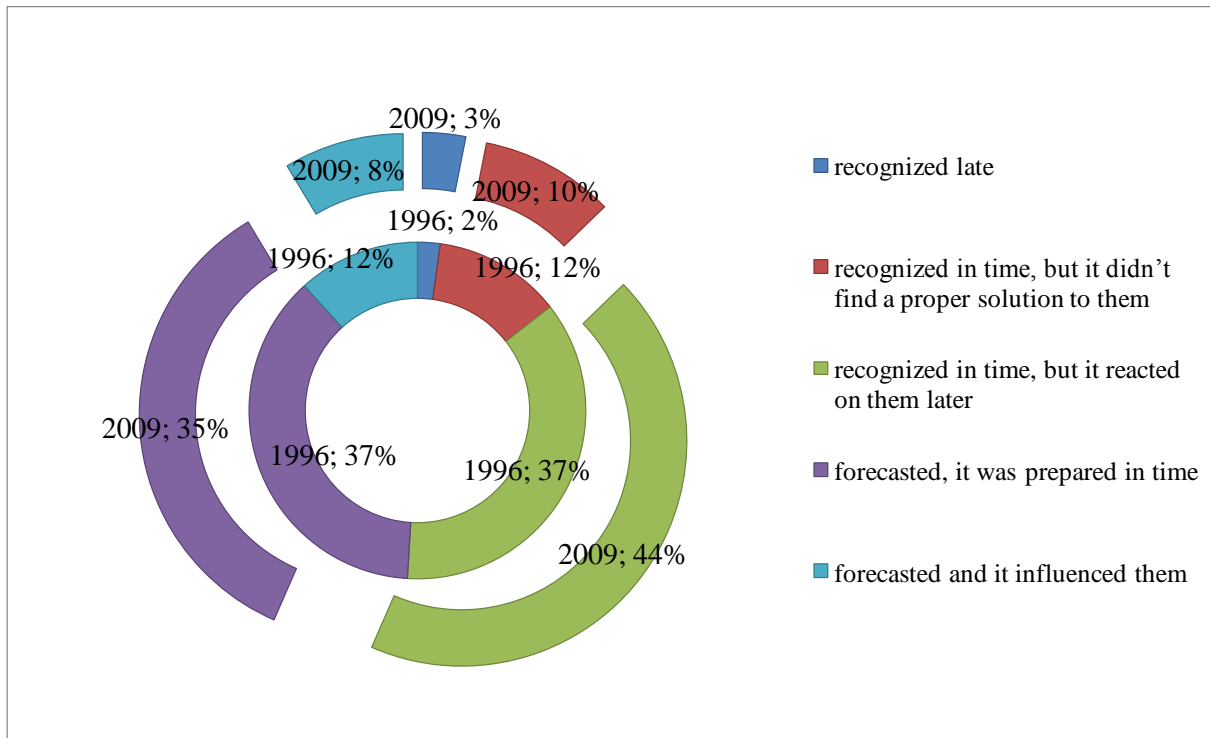
The relation of the firms to the environmental changes shows an unaltered picture (Table 11. and Figure 23.), altogether one tenth of the enterprises are able to go to meet changes and influence its environment.

**TABLE 11:** Adaptation ability of the firms between 1992 and 2009

The changes were by the firm	1996	1999	2004	2009
recognized late	2.2%	1.3%	2.9%	3.1%
recognized in time, but it didn't find a proper solution to them	12.3%	9.1%	11.3%	9.7%
recognized in time, but it reacted on them later	36.5%	38.1%	37.0%	43.8%
forecasted, it was prepared in time	37.3%	40.7%	37.3%	34.8%
forecasted and it influenced them	11.7%	10.7%	11.6%	8.6%

Source of data: VKK CEO databases 1996-2009. Remark: the data sets are signed at the date of the survey, but go for the former 3-4 years.

**FIGURE 23:** Similar distribution of the firms' adaptation ability between periods 1992-1995 and 2005-2008



Source of data: VKK CEO databases 1996-2009. Remark: the data sets are signed at the date of the survey, but go for the former 3-4 years.

Based on the characteristics of the variable we can form an opinion about the  $H2_{\text{population}}$  hypothesis, whereas we accept it.

***$H2_{\text{population}}$ : The perception of the environmental changes and the capability to influence them is independent from the external environment.***

#### 4.2.3 Control variable's relation to the variable

Larger firms have usually more ability to notify environmental changes in advance, be prepared for them and influence them. (beside 99.99% confidence,  $\rho_{\text{staff}}=0.117$ ,  $\rho_{\text{assets}}=0.186$  and  $\rho_{\text{revenue}}=0.190$ ).

On the contrary the export rate, the majority ownership, the main activity of the firms and the type of the territorial position are independent from the firm's ability to forecast environmental changes and influence them.

## 4.3 The strategy followed

### 4.3.1 The concrete appearance of the variable in the VKK database

There is a concrete question referring to the strategy followed in the competitiveness research program. The question was at the beginning among the questions raised to the CEOs. In all survey it was the question v2:

V2. Sign, which characterization describes best your firm's followed strategy in the last 3-4 years! If there was a significant change in the strategy during the signed period, sign more squares and write down next to it the year in which the strategy was characteristic!

My firm in the period between 1992-1995/1995-1998/2000-2003/2005-2008 typically		Year
a) followed withdrawal strategy: concentrated its resources to defensible positions	<input type="checkbox"/>	.....
b) followed defending strategy: concentrated its resources to defence of existing positions	<input type="checkbox"/>	.....
c) followed stability strategy: concentrated its resources to strengthen its existing positions	<input type="checkbox"/>	.....
d) followed growth strategy: concentrated its resources to build up new strategic positions	<input type="checkbox"/>	.....
e) followed attacking strategy: concentrated its resources to build up new strategic positions and to weaken the competitors' positions	<input type="checkbox"/>	.....
f) followed focusing strategy: concentrated its resources to a certain niche market segment	<input type="checkbox"/>	.....
g) followed no consistent strategy.	<input type="checkbox"/>	.....

The answers by subquestions were put into 2 variables, into a dichotomy variable as a function of the certain question was selected or not, and, if it was selected, into another variable which contained the year too.

During the years there were 2 important changes in the question:

- Since 2004 the (f) focusing strategy was got into the question, which was not included in the former surveys
- In 2009 the strategy referred to the year 2009 appeared in a separate question, which got extra attention under the influence of the crisis

### 4.3.2 Characteristics and description of the variable

The variable contains data about the in the previous 3-4 years followed strategy of the firms from 1992 to 2009. The four surveys contain 1240 observations. From these there are 1131 cases with an answer to this question.

It can be proved based on the summary of the 1925 response-elements to this question (Table 12.) that the stability (34.75%) and the growth (29.19%) strategies are the two most frequent ones examining the 4 surveys aggregately. It comes up as a question that what is the proportion of the single strategies in the single periods?

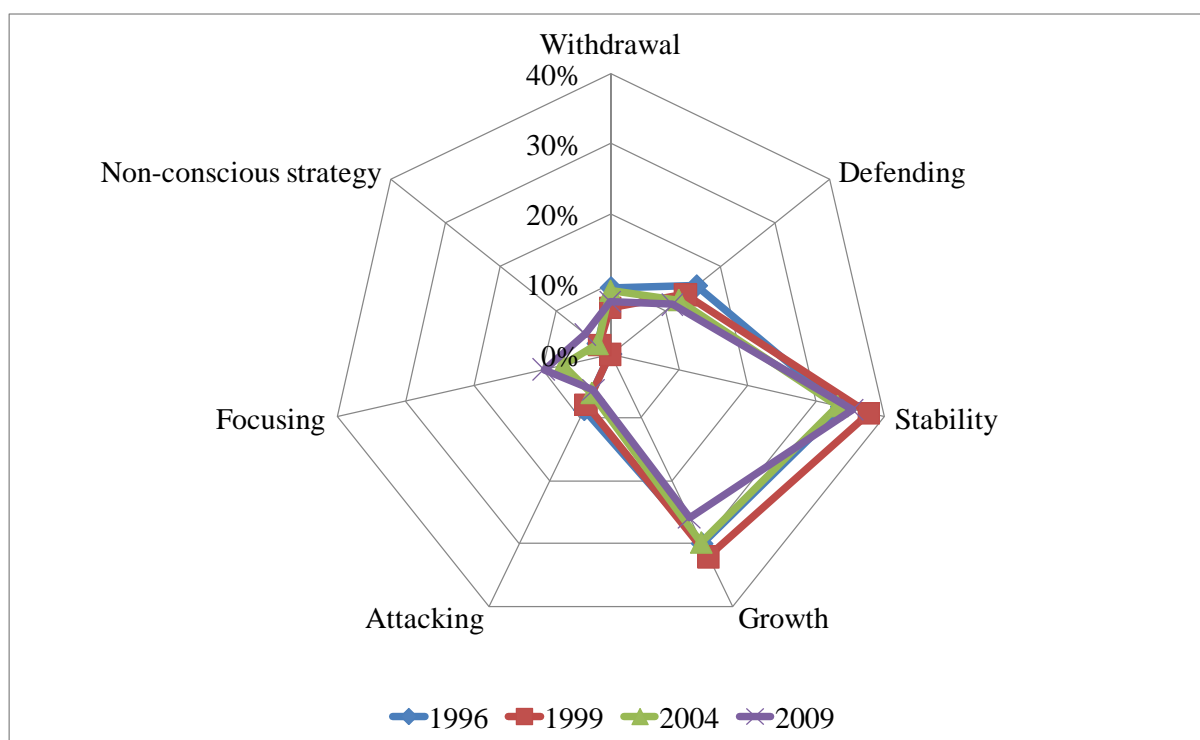
**TABLE 12:** Followed strategy in the past 3-4 years

Strategy	N	%
Withdrawal	161	8,36%
Defending	260	13,51%
Stability	669	34,75%
Growth	562	29,19%
Attacking	136	7,06%
Focusing	83	4,31%
Non-conscious strategy	54	2,81%
Total	1925	100%

*Source of data: VKK CEO databases 1996-2009.*

On the occasion of the 4 surveys the single strategies have stable proportions (Figure 24. and the data appendix 6.3.). The stability and the growth strategies are the two mostly the strategy followed. In the questionnaire in 2004 included focusing strategy was not a frequent choice of the respondent neither in 2004 nor in 2009.

**FIGURE 24:** The strategy followed

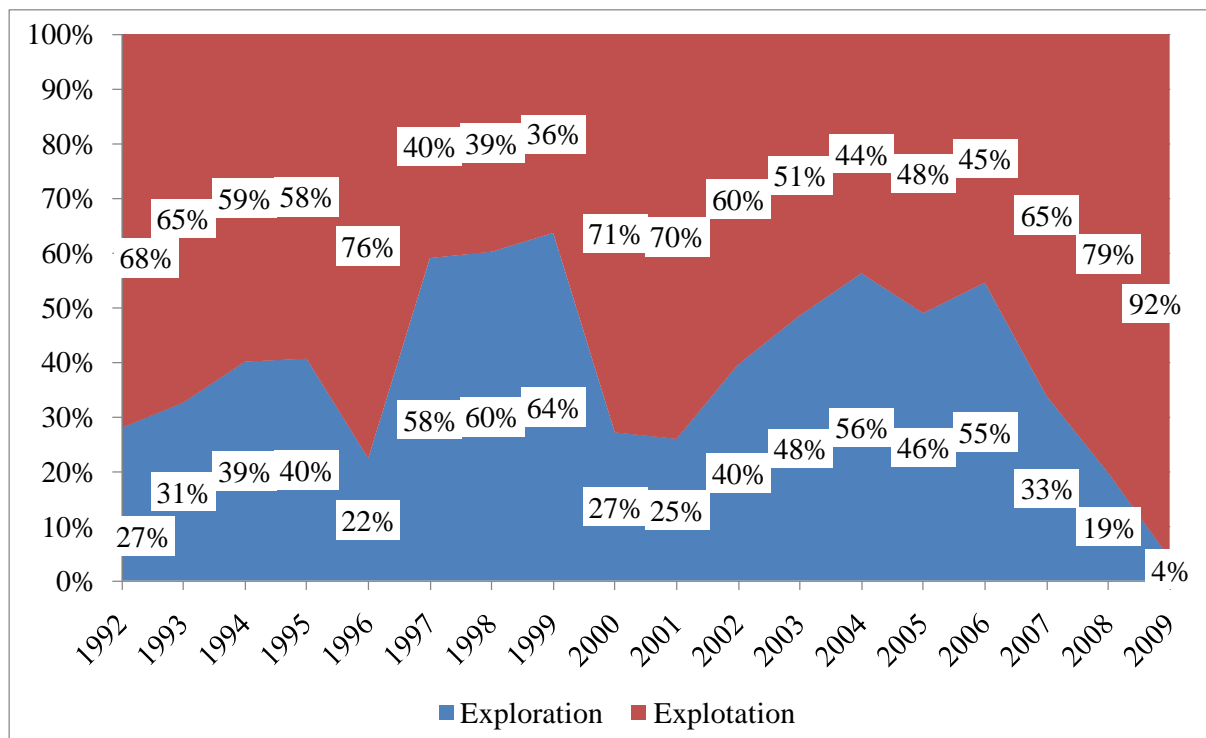


*Source of data: VKK CEO databases 1996-2009. Remark: the data sets are signed at the date of the survey, but go for the former 3-4 years.*

The distribution within one year in the 3-4 years embracing structures is already not uniform. Moreover well identifiable tendencies are noticeable, which are shown in Figure 25. (input data are in appendix 6.3.). In order to the better illustration I formed 2 categories from the strategy followed (1) Exploitation: strategies for defence and exploitation the existing positions and markets – withdrawal, defending, stability and focusing, and (2) Exploration (and conquest): searching for and building up new positions and markets – growth and attacking strategies.

At the strategic grouping the arrangement of 5 response-elements into 2 categories was unambiguous; the placing of the focusing strategy was the more serious question. At this the argument, that related to strategy it is more about the exploitation of the existing market, was the decisive.

**FIGURE 25:** Consciously followed strategies 1992-2009



*Source of data: VKK CEO databases 1996-2009. Remark: The data sets show the frequencies in the sample, which make out the 100% with the unconscious strategies. The Figure shows the distribution within the conscious strategies yearly.*

A typical picture of the strategy types is outlined in the Figure 25, whereas from 1992 to 1999 (except year 1996) the role of exploration has grown intensively, even between 1997 and 1999 the growth has become more important than the strengthening of the existing positions.

In 2000 after the consolidation, when the firms were focusing again on the stabilization of the positions, to 2006 the proportion of the exploration strategies has grown again, but it was slower than in the earlier decade. After this the rate of the exploration strategies decreases constantly, which fell from 55% in 2006 to 4% in 2009.

By the comparison between the found results and the earlier (Figure 5) examined macroeconomic situation there is a possibility to analyze the  $H1_{population}$  hypothesis, whereas I accept the hypothesis.

***$H1_{population}$ : The economic growth on the macro level fosters exploration while recession retains exploitation.***

After the interpretation of the aggregated data it is worth analyzing the individual strategies of the firms. 1240 observations are identifiable, from which 931 answered the question and from these 877 followed at least one strategy. This number compared with the 1925 responses and the 1871 consciously the strategy followed refers to that the enterprises which followed a strategy altered on average on one occasion strategy during 3-4 years. It is a question that the firms remained in the same type of adaptation strategy (exploration, exploitation), or changed that?

Based on the sample 588 firms followed 1, 1337 firms followed 2, 130 firms followed 3, 38 firms followed 4, 5 firms followed 5 and 3 firms followed 6 kind of strategies in the previous 3-4 years of the surveys. From enterprises, which followed more strategies (513), 389 followed explorative and 483 exploitative strategy. 154 firms followed exclusively explorative or exclusively exploitative strategy, as against the 359 enterprises which followed both explorative and exploitative strategy during the examined periods.

Entirely from the 1101 firms which followed some kind of consciously defined strategy, 359 (32.6%) is the number of the firms which changed the explorative and exploitative strategy within 3-4 years or followed them simultaneously. These firms are ambidextrous organisations. The distribution of ambidextrous enterprises shows a similar picture at the surveys in 1996 and 2009 and in 1999 and 2004 (Table 13).

**TABLE 13:** Followed strategy in the last 3-4 years

	1996	1999	2004	2009	Total
Non- ambidextrous	253	197	196	235	881
Ambidextrous	73	103	105	78	359
Total	326	300	301	313	1240

Source of data: Calculated values based on VKK CEO databases 1996-2009

### 4.3.3 Control variable's relation to the variable

I examine the control variables on the formed variables and not on the original ones, namely whether the firm followed an explorative and/or an exploitative strategy in the last 3-4 years. Simultaneously I analyze the ambidexterity's relation to the control variables.

We can state with 99.9% confidence that there is a relation between every examined category of the firm's size and the explorative strategy ( $\rho_{\text{staff}}=0.123$ ,  $\rho_{\text{assets}}=0.112$  and  $\rho_{\text{revenue}}=0.161$ ), whereas the bigger enterprises follow explorative (growth or attacking) strategy at a higher probability than smaller firms. On the contrary in case of the exploitative strategy we can state only at the revenue and assets ( $\rho_{\text{assets}}=-0.108$  and  $\rho_{\text{revenue}}=-0.121$ ), that it is characteristic more for smaller firms than bigger enterprises, because there is no significant connection between the number of staff category and the exploitation.

The ambidexterity is neither a function of the firm's size nor the export rate from the revenue. This latter feature is true for both the exploitative and explorative strategies, whereas there is no significant connection between the strategies and the export rate.

The type of the majority owner has an influence on the followed strategy of the firms (99.9% confidence,  $\varphi_{\text{exploitative}}=0.155$ ,  $\varphi_{\text{explorative}}=0.116$ ) but not on the ambidexterity. 75.7% of the state-owned firms, 68.1% of the firms in domestic majority ownership and 53.7% of the firms in foreign majority ownership follow exploitative strategy. As opposed to this 45.5% of the state-owned firms, 48.7% of the domestic and 62.2% of the foreign firms follow explorative strategy.

There is no significant connection between the strategy followed, the ambidexterity and the main activity of the organisations. There is a significant relation between the region and the exploitative activity at 99.9% confidence ( $\varphi_{\text{exploitative}}=0.211$ ), whereas firms of the Middle-Hungarian Region follow an exploitative activity less than the firms in other regions, but the exploitation is true for 57.4% of the firms, however it is a lower value compared to the average 68.8%.

## 4.4 Competitive performance of the firms

### 4.4.1 The concrete appearance of the variable in the VKK database

V7/8/14/16 Which level has the firm reached at the following fields which characterize its performance compared to its strongest competitors in the last 2-3 years? If the enterprise operates in more than one industry, please answer referring to the major industry! If the firm doesn't have domestic competitors, compare your enterprise to the characteristic level of the foreign leading firms of the industry!

	Our performance is compared to the major competitors:				
	much worse	basically the same			much better
Cost efficiency	1	2	3	4	5
Market share	1	2	3	4	5
Technology level	1	2	3	4	5
Product quality	1	2	3	4	5
Range of product lines	1	2	3	4	5
Competitive prices	1	2	3	4	5
Delivery accuracy	1	2	3	4	5
Customisation readiness	1	2	3	4	5
Flexibility of production system	1	2	3	4	5
Efficiency of logistics system	1	2	3	4	5
Short delivery deadlines	1	2	3	4	5
Speed of adaptation to changing consumer needs	1	2	3	4	5
Manufacturing quality	1	2	3	4	5
Strategic alliances with major partners	1	2	3	4	5
Corporate image	1	2	3	4	5
Organisation of distribution channels	1	2	3	4	5
Creditability	1	2	3	4	5
Level of receivables	1	2	3	4	5
Solvency	1	2	3	4	5
Consumer service level	1	2	3	4	5
Lobby capacity	1	2	3	4	5
Sales to state or publicly financed institutions	1	2	3	4	5
Ability to forecast market changes	1	2	3	4	5
Export activity	1	2	3	4	5
Ethical behaviour	1	2	3	4	5
Environmental (ecological) awareness	1	2	3	4	5
Introduction of proper quality raw materials	1	2	3	4	5
Reliable raw material suppliers	1	2	3	4	5
Capacity utilisation	1	2	3	4	5
Qualification of employees	1	2	3	4	5
Application of innovative sales promotion methods	1	2	3	4	5
Highly qualified, professional managers	1	2	3	4	5
Up-to-date decision making/operation systems	1	2	3	4	5
Level of R+D expenditures	1	2	3	4	5
Launch of new products	1	2	3	4	5
Efficiency of organisational structure	1	2	3	4	5
Integrated enterprise information system	1	2	3	4	5
Level of management information system	1	2	3	4	5
Integration of business administration functions	1	2	3	4	5
More direct relation to consumers	1	2	3	4	5
Adequate stocks	1	2	3	4	5
Profitability	1	2	3	4	5

The responses to the subquestions were encoded at a 5 graded ordinal scale.



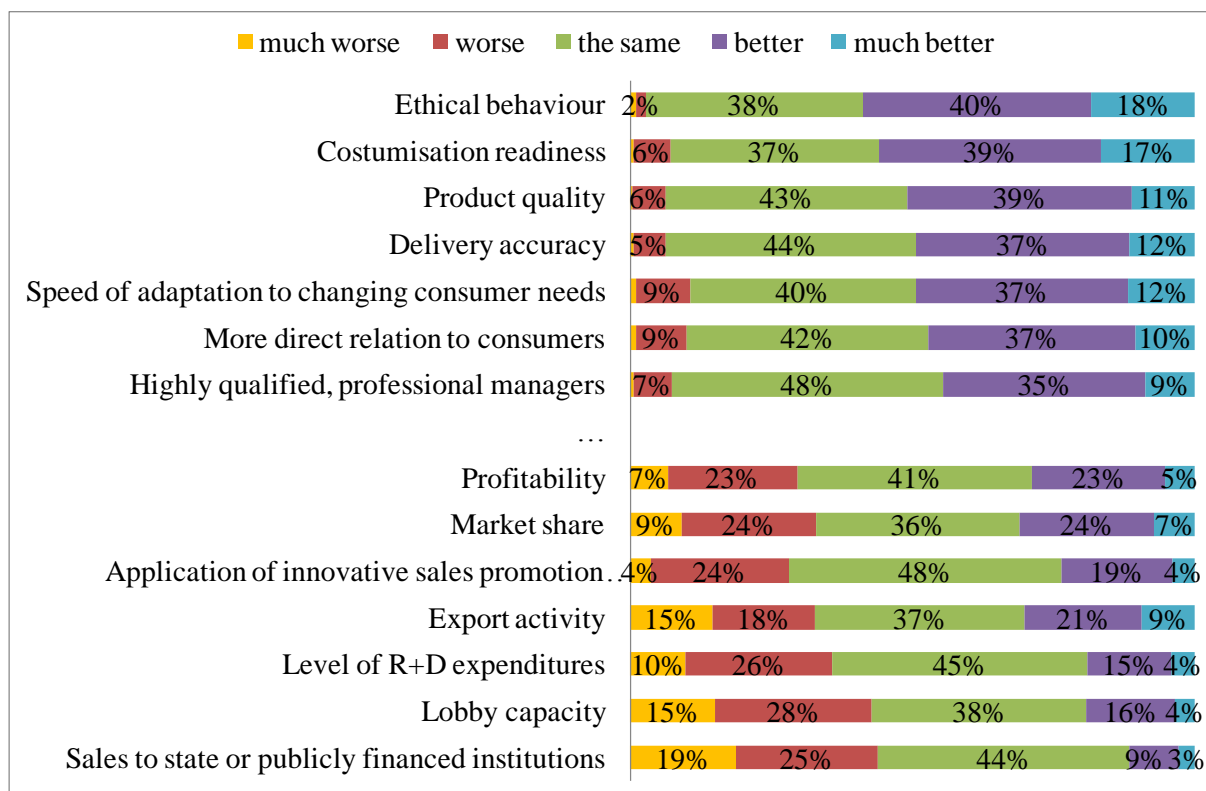
The performance of the firms can be measured in several ways. The financial performance is important, but if we would like to identify the realized strategy we have to consider several other fields. The opinions of the CEOs about the enterprise performance from a strategic view are analyzed by the questions signed v14 (2009), v16 (2004), and v7 (1999) and v8 (1996) with 42 variables.

The question from 1996 to 1999 was augmented with one element: j) Efficiency of the logistics system, and the questions were rephrased, the positive attributes disappeared from the names of the variables (e.g.: instead of low expenditures: cost-efficiency).

#### 4.4.2 Characteristics and description of the variable

In case of the judgment of the firm performance CEOs judge their performance generally better than their major competitor's (Figure 26, and appendix 6.4.1.). They take their ethical behaviour, customisation readiness and product quality particularly outstanding.

**FIGURE 26:** Level of firm performance compared to the main competitors



*Source of data: Calculated values based on VKK CEO databases 1996-2009. Remark: The variable Efficiency of logistics system was not included in the survey in 1996.*

There are only 7 from the examined 42 elements in which according to several firms the major competitors are better than worse, namely; (1) profitability, (2) market share, (3) application of innovative sales promotion methods, (4) export activity, (5) level of R+D expenditures, (6) lobby capacity and (7) sales to state or publicly financed institutions.

#### **4.4.3 Managing of missing values**

At the 42 variables from the 1240 observation there are only 585 cases which contain every data. One reason for this is that the questions are partly completed, another is that the survey is contained with one variable less variables. Here was a decision point in the research, whereas:

A. Shall I lose the data of the survey in 1996? (326 cases)

B. Shall I lose cases which contain only few missing data?

At question A) the possible prize is that, with the dropping out only one variable I will get 739 cases instead of 585, which new cases come mostly from the survey in 1996. It is a loss that I lose the information content of the variable. Because the variable was judge as significantly divergent from the average only by few managers (altogether 7%!), and the intended measuring content of the variable is substituted by several variables (shortness of delivery deadline, delivery accuracy, elasticity of production system, elasticity of satisfying customer needs, flexible response to the changes of consumer needs), so I decide to drop up the variable and integrate the results of the survey in 1996.

Related to question B) I have these possibilities:

- There is no replacement,
- Missing values are replaced with the variable's mean,
- Missing values are replaced with the variable's mode,
- Missing values are replaced with cluster-centres
- Dropping out variables, which has too much missing values and which can be replaced by other variables

The first case misses too many cases, by which 15-20% of the data are lost, so this is rejectable. At the second one replacing with mean is hard to interpret in cases of data measured on ordinal scale – without mean –, it is better to replace with the most frequent value (mode) which is the third possibility. This means in 2 cases (customer need and ethical behaviour) replacement with value 4, and in the other 39 case a replacement with value 3.

The forth possibility, which is a prospectively statistically good replacement way, doesn't meet the requirement that I want to use data directly for forming latent contents.

The fifth possibility is also rejected, because in all cases ca. 1000 observation can be identified. I accept it based on the professional practice, so there are no more variables dropped out, but the missing character of the variables has to be considered at every interpretation.

So I decided at question B) on the replacement with mode, but only related to cases where the number of missing observations are not higher than 6 (15%). This number came from the elbow analysis of the missing values, whereas after dropping out the logistics variable there are 118 firms with 1 missing value, 54 with 2, 40 with 3, 25 with 4, 22 with 5, 11 with 6 missing values. After this there are entirely 1009 enterprises for the further examinations, which is 81.4% of the potential sample. Above this adding a new variable has returns under the threshold value (appendix 6.4.4.).

#### **4.4.4 Exploration of the latent dimensions of the performance evaluation**

However the performance of the CEOs was measured by 42/41 variables, the latent content behind these can be reduced to significant less dimensions. For dimension reduction, instead of the in literature earlier used factor analysis and cluster analysis (Antal-Mokos and Kovács, 1998, Antal-Mokos and Tóth, 2001, Hortoványi and Szabó, 2006b) I chose multidimensional scaling (MDS). In the course of choice I take into consideration the recommendations of Kovács (2006) and Hortoványi (2010), connected to this the 2 most important arguments are:

- the variables don't have normal distribution in pairs (appendix 6.4.2 and 6.4.3.), so don't meet the basis condition of factor analysis. This can be attributable among other to the (low degree) ordinal measuring scale. In case of variables measured on ordinal scale the mean and standard deviation cannot be interpreted and we can't speak about correlation.
- in practice through factor analysis altogether 50-60% of the phenomenon was explained with relatively numerous factors. By earlier researches for this level 10 factors were needed. The multidimensional scaling strives for a significant better fitting at a level above 95%, at a lower number of factors.

After the data cleaning the determination of the number of dimensions comes and then the exploration of the economical content of the dimensions. I chose within MDS the PROXSCAL method (the other opportunity is: ALSCAL), while this method fits to the examined problem. The data were themselves not distance data, so their (ordinal) transformation was needed. To measure distances, because the variables were measured on ordinal scale, I chose  $\chi^2$  - based measure method. I made distances counted between the observation units (cases). Appendix 6.4.5. contains the further settings.

I carried out the executing between 1 and 10 dimensions. Based on the executing it can be pointed out that the fitting is acceptable already at 2 dimensions (S-Stress index value is:  $0.1753 < 0.2$ ). At 3 dimensions it is satisfactory (S-Stress index value is:  $0.1261 < 0.15$ ), at 4 dimension it is good (S-Stress index value is:  $0.0934 < 0.1$ ), above 7 dimensions the fitting is excellent (S-Stress index value is:  $0.0454 < 0.05$ ). The information for the other dimensions is shown in Table 14 and in details in appendix 6.4.6.

**TABLE 14:** Suitability of fitting in case of different dimensions

dimension	S-Stress	goodness of fitting
1	0.268	unacceptable
2	0.175	acceptable
3	0.126	satisfactory
4	0.093	good
5	0.074	good
6	0.063	good
7	0.045	excellent
8	0.038	excellent
9	0.034	excellent
10	0.030	excellent

*Source of data: Calculated values based on VKK CEO databases 1996-2009*

Based on the fitting examination I analyze the 7-dimension-solution in details, because in this case the fitting is excellent, so 95% of the phenomenon wanted to be explained. The following part contains the exploration and description of these 7 dimensions.

#### **4.4.5 Dimensions of performance evaluation**

To explore the given 7 dimensions I carried out correlation analysis between the calculated coordinates of the single dimensions and the original variables. During the correlation analysis I calculated Spearman  $\rho$  value, because I examined connections between variables measured on ordinal scale. At 99.999999999999999 % ( $p < 10^{-19}$ ) confidence level there is a connection ( $\rho$  value is in absolute value more than 0.283) in the signed cases in Table 15. and in appendix 6.4.7. (in appendix I signed with colours the highlighted connections in the Table).

The fitting of the 7-dimension-solution is also excellent at the subsamples of the single surveys: the S-Stress index value is 0.036; 0.044; 0.036 and 0.036 of the subsamples in the survey in 1996, 1999, 2004 and 2009. Except the survey in 1999, in the other cases the fitting is also excellent at 6 dimensions, but in order to have a uniform examination framework I evaluate the 7-dimension-solution. Appendix 6.4.13-16. introduces the significant connections between the dimension of the single subsamples and the originally used variables.

**TABLE 15:** Correlated variables with performance dimensions

Dimension	Variable related to the dimension*
<b>Market and lobby force D1</b>	market share technology level customisation readiness (opposite) strategic alliance with major partners corporate image organisation of distribution channels creditability lobby capacity sale to state and publicly financed institutions ability to forecast market changes export activity application of innovative sales promotion methods level of R+D expenditures launch of new products integrated enterprise information system level of management information system
<b>Financial force D2</b>	cost efficiency creditability level of receivables solvency profitability
<b>Organisational efficiency D3</b>	application of innovative sales promotion methods up-to-date decision making/operating systems efficiency of organisational structure integrated enterprise information system level of management information system integration of business administration functions
<b>Market orientation D4</b>	export activity sales to state and governmental institutions (opposite)
<b>Product orientation D5</b>	range of product lines
<b>Network position D6</b>	market share strategic alliance with major partners corporate image organisation of distribution channels
<b>Provisional competitive advantage D7</b>	cost efficiency range of product lines capacity utilization profitability

\* With a confidence of 99.9999999999999999 % ( $p < 10^{-19}$ ) the connection can be exhibited ( $p$  value is in absolute value bigger than 0.283)

#### **4.4.6 Changes in the dimensions of performance evaluation during the four surveys**

The performance evaluation dimensions of the single periods can be explored comparing the appeared large structure, which manages the 4 surveys as a unit, to the subsamples of the single surveys. The dimensions show the contemporary competitive advantages. The description of the dimensions was made by the usage of the results shown in Table 15 and appendix 6.4.9-12. (In the Tables I signed connections at a 99.99999999% confidence level with colour. In order to take easier the interpretation of some variables, in comparison with the correlation data Tables, I made in certain Tables monotonous transformation.)

The D1 – Market and lobby force dimension's components are extremely stable during the single surveys. It seems robust related to the latent content in the managers' mind that what characterize a firm with market and lobby force. The most important feature is the high lobby and market force which is coupled with high technology quality level and R+D activity. It can forecast and influence market conditions well. Related to markets it is active on export and also on governmental markets, applies innovative sales promotion methods too. Its organisation possesses integrated and up-to-date information systems. It is tend to and because of its inertia is obliged to misuse its market force which can result in lower customisation readiness.

The D2 – Financial force's content, and the influencing factors changed significantly during the years. At the survey in 1996 the financial efficiency and the sales to state were opposites in the same dimension. In 1999 and in 2004 the financial efficiency was coupled with structural efficiency. To 2009 the situation has remarkably changed, and firms show significant financial force which can be more flexible and besides are able to push new products through the sales channels.

The D3 – Organisational efficiencies content has also changed at the single surveys. In 1996 the up-to-date and efficient structure is in contradiction with sales to state. To 1999 efficient structure can be interpreted not only within the firm, but also in a position in a (international) value creation chain, along strategic alliances with all of its advantages and disadvantages. In 2009 the efficient organisational structure is rather determined by the sales challenges.

The D4 – Market orientation's two ends are the intensive presence on the export markets and the sales to state or publicly financed institutions. As the interpretation of the survey in 1996 the market orientation is correlated with the high product quality, technology and manufacturing level. This "elitist" view is perceptible in the survey in 1999 too, but then the up-to-date organisational structure already appears with the export orientation, which is

connected to premium pricing. It is already characteristic in 2004 that the export market sales are accompanied by higher product quality, but the accuracy and shortness of delivery deadline are also revealed. In 2009 this variable is also determined by the sales constraint, which underlines the importance of innovative sales promotion methods and new markets.

The D5 – Product orientation is at the surveys in 2004 and in 1999 particularly important. In 1999 the economies of scale determines this variable. In 2004 cost efficiency is accompanied by the economies of scope, so the capacity utilization is realized by taking into consideration the synergies from the range of product lines.

The D6 – Network position can be taken for a new phenomenon which is connected with the network economy. Networks are important, and raise new opportunities to enterprises (Boari, 2001). As for its content it includes market share, strategic alliance, corporate image and organisation of distribution channels. The 5 identified dimensions in the survey 1999 serve as a base of this dimension, which draws attention to the ethical behaviour and solvency. These two elements create mostly trust at the start of cooperation. To 2004 the network position is supplemented with the more directed relation to consumers. In 2009 the speed adaptation to changing consumer needs, the shortening of delivery deadlines and creditability strengthen.

The D7 - Provisional competition position dimension changes most during the surveys. Generally the cost efficiency, the range of product lines, the capacity utilization and the profitability characterize it, but from time to time another element is dominated. The alteration from 1996 to 2009 is especially drastic, because in the earlier time the provisional competitive advantage comes from the range of product lines and the competitive prices, now resilience is the most important characteristic of a firm. Besides, the role of the export markets is especially important.

#### **4.4.7 Control variable's relation to the dimensions of performance evaluation**

Larger enterprises have larger market and lobby force than the smaller firms (99.99% confidence,  $\rho_{\text{staff}}=0.178$ ,  $\rho_{\text{assets}}=0.242$  and  $\rho_{\text{revenue}}=0.219$ ). There are no significant connection between the firm size and the other dimensions.

The export orientation is in connection with several dimensions at a 99.99% confidence level. There is a positive connection between the export rate and the market orientation ( $\rho=0.320$ ), which reflects the consistency of the questionnaire. There is also a positive connection between the export rate and the provisional competitive advantage ( $\rho=0.206$ ), which refers to that the firms with higher export rate possess competitive advantage as opposed to firms with lower export rate.



There is a negative connection between the export rate and organisational efficiency ( $\rho=-0.236$ ), and product orientation ( $\rho=-0.171$ ). The first connection relates to that the lowest degree of internationalism means serious organisational challenges; while the second refers to that the higher export rate can be realized with fewer products. The export rate shows with the other dimensions no significant connection.

I recoded the performance evaluation scale with monotonous transformation into an ordinal scale with 5 degrees in order to examine the connection with crosstabs between the type of majority owner, the main activity of the firms, the territorial position and the dimensions of performance evaluations. This procedure enabled that there will be enough elements in the cells and the connection index-number will be accurate. I used the quintiles of the single dimensions for recoding, which are introduced besides the descriptive statistics in appendix 6.4.17.

There is a connection at 99.99% confidence level between the majority owner and the market and lobby force ( $\phi=0.189$ ), and the financial force ( $\phi=0.195$ ). The market and lobby force of firms in state or foreign majority ownership is somewhat higher than firm's which are in domestic majority property, but this means also more favourable financial situation only for firms in foreign majority ownership.

The industry is not independent from the market and lobby force ( $\phi=0.255$ ) at a similar high confidence (99.99%) level, whereas the market and lobby force is lower at organisations in agriculture, mining and manufacturing industry, while it is typically higher at entities in power supply, trade, service or community services.

There is no significant connection at 99.99% confidence level between the type of majority owner, the main activity of the firms, the territorial position and the non-mentioned dimensions of the performance evaluation.

## **4.5 Performance configurations**

### **4.5.1 Identifying performance configurations with clustering**

The identified performance evaluation dimensions are orthogonal to each other, so they are independent from each other based on the method of multidimensional scaling which was used for exploring the latent content. So in order to understand precisely the performance configuration of a firm, its coordinates are needed after every dimension. The coordinates were identified to 1009 firms in the common database of the 4 surveys. On basis of the derived coordinates dense points can be determined in space which provides an opportunity to form homogenous enterprise groups, clusters.

I used cluster analysis to create groups which possess homogenous features along the performance configurations (strategy types). Firstly I carried out hierarchical cluster analysis in order to determine the number of clusters, to limit the recommended interval of the number of clusters.

In case of the hierarchical cluster analysis firstly I used based on the recommendations of Anderberg (1973) the Ward method, I examined the agglomeration schedule, in it the coefficient column, from which it is proved, that I can't use the elbow criterion, because there aren't proper growth in homogeneity, and the 50% rule will result in unreal too much clusters.

I continue clustering with non-hierarchical cluster analysis. Relying on the suggestions of Lehmann (1985) the practical cluster number falls somewhere between  $N/30$  and  $N/60$ , because there are 1009 cases in the sample, the recommended cluster number can be between 16 and 34. This number is considerably higher than the determined cluster number in most former researches in this topic, which move between 3 and 10 (Campell-Hunt, 2000), but there is an example for research too which examines similarly high cluster numbers (Wright et al., 1991). The high number of clusters in latter case sprang from that researches didn't use factor analysis previously; they carried out cluster analysis directly on the variables.

Based on these there are 2 possible ways to continue the research:

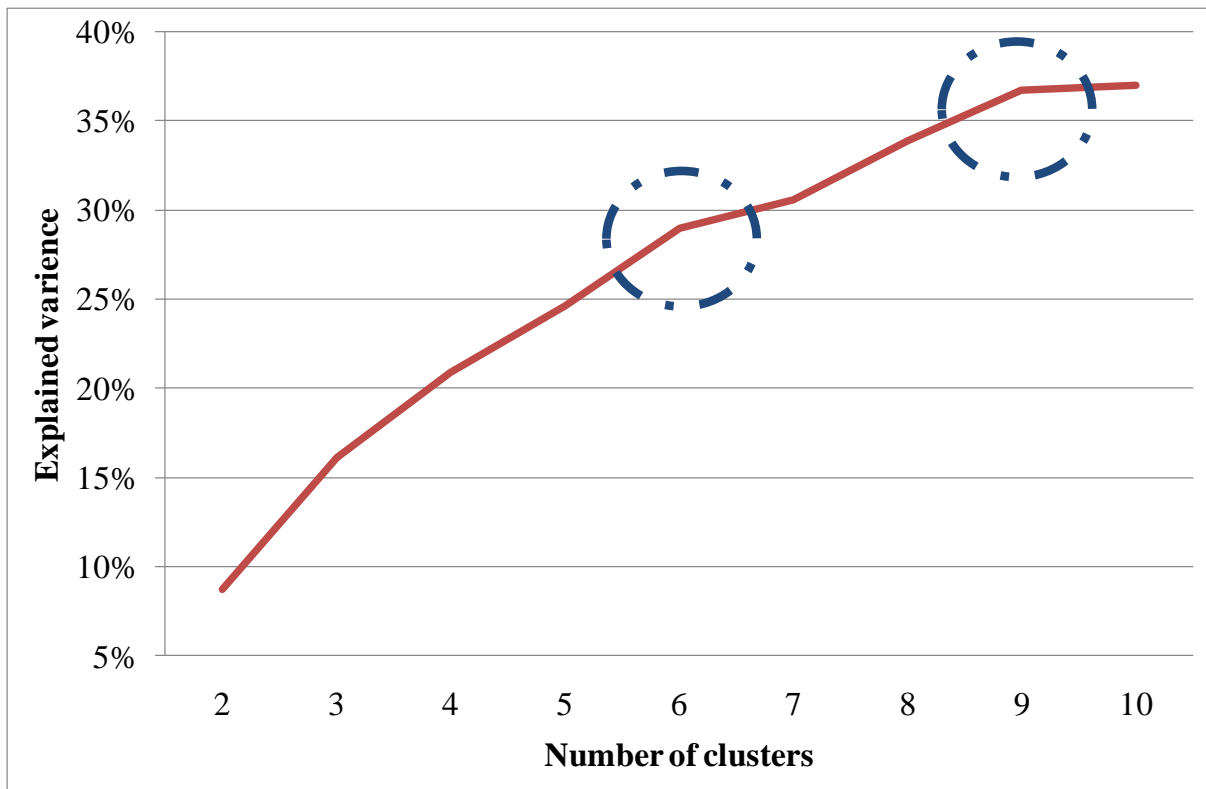
- 1) I analyze the ideal number of clusters between 2 and 10 building upon the traditions of the determining researches in this field
- 2) I determine the ideal number of clusters which explains satisfactorily high percentage of the examined phenomenon.

#### 4.5.2 Identifying clusters between 2 and 10

Firstly I analyzed the explanation force of clusters formed by k-means method between 2 and 10. I tested with Means execution the distribution of the cases in case of different cluster numbers, because it isn't worth analyzing a cluster number where the number of cases in the single clusters is too low. It is also important that within the single groups the standard deviation won't be bigger than 1, because we used standardized variables whose average standard deviation is 1.

Further on it was possible to interpret the results of the non-hierarchical (k-means) cluster analysis in order to determine the accurate cluster centres and to subject the different cluster numbers to further examination.

**FIGURE 27:** Explained variance of clusters and elbows in case of 2-10 solutions



*Source of data: Calculated values based on VKK CEO databases 1996-2009*

Firstly I determined the ideal number of clusters by the elbow method. Examining clusters between 2 and 10 two elbows can be defined, at 6 and at 9 clusters. The explaining force of the 6-cluster-solution is significantly lower (29%), than by the 9-cluster-solution (37%) (Figure 27.).

The forming of clusters step by step ascending and the analysis of the changes in the distances of cluster centres that in case of six clusters the decrease in distance was pretty little compared to the previous level, but at the further level this distance was bigger. Through the forming of clusters step by step ascending and the logical analysis of the groups (grouping examined with crosstabs) the analysis of the case number of the clusters confirmed that after the sixth step a relative stabilization starts, so I examine in the following the 6-cluster-solution (Table 16.).

The case number of clusters is between 65 and 296 which is a fivefold difference, but this value isn't too high, so it can be considered at clustering as balanced. Besides along the dimensions of the performance evaluation the clusters can be separated from each other well, it is possible to understand the single configurations. It is important to notice that based on the ANOVA analysis, every dimension had a significant role in the clustering.

**TABLE 16:** 6 performance configuration (strategy type)

	C1	C2	C3	C4	C5	C6
<b>Market and lobby force</b>	,479	,351	-,117	-,553	-,495	-,756
<b>Financial force</b>	-,107	,104	-,228	-,337	,568	,530
<b>Organisational efficiency</b>	,577	-,389	,078	-,779	-,083	,323
<b>Market orientation</b>	-,328	-,060	1,092	-,955	,485	,038
<b>Product orientation</b>	-,012	-,204	,364	,433	,384	-2,016
<b>Network position</b>	-,068	-,384	,791	,540	-1,251	,381
<b>Provisional competitive advantage</b>	-,188	1,118	,148	-,493	-,738	-,509
Count of cases	296	201	177	151	119	65
Distribution	29,3%	19,9%	17,5%	15,0%	11,8%	6,4%

*Source of data: Calculated values based on VKK CEO databases 1996-2009. The strongly positive values are highlighted with green, the neutrals with yellow, and the strongly negative values with red.*

In Table 16 there are 6 cluster centres along the single performance evaluation dimensions. Colour scale helps the easier interpretation in the Table. The strongly positive values are signed with green, the neutral with yellow and the strongly negative values with red.

The high positive value refers to high value according to the certain dimension, on the contrary the negative one shows that there are firms with low values in that group according to the certain dimension. I identified the single groups based on the most characteristic and non-characteristic features.

Firms with high market force and organisational efficiency make up the largest cluster. On the contrary the market orientation of these firms is low which refers to that these enterprises tend to misuse their market and lobby force at the consumer's expense. Their financial force and provisional competitive advantage are slightly negative, their product orientation and network position are neutral. Based on these facts, these firms got the title: C1- 'Protectors of a strong market and lobby position'.

The group with the second-most cases contains firms with also high market and lobby force, but these firms are characterized mostly by the grabbing of provisional competitive advantages. Due to it they possess good financial force, despite the less efficient organisation and less favourable network position. Besides they are characterized by lower product orientation and almost neutral market orientation. Based on these facts, these firms got the title: C2- 'Builders of a strong market and lobby position'.

The third largest group of firm towers above their industrial competitors in market orientation, network position and product orientation, and the provisional competitive advantage is above average. These are at the expense of the market and lobby position, so if someone wants to consider the interests of every stakeholder it will have worse financial position. Based on these facts, these firms got the title: C3- 'International satellite companies'.

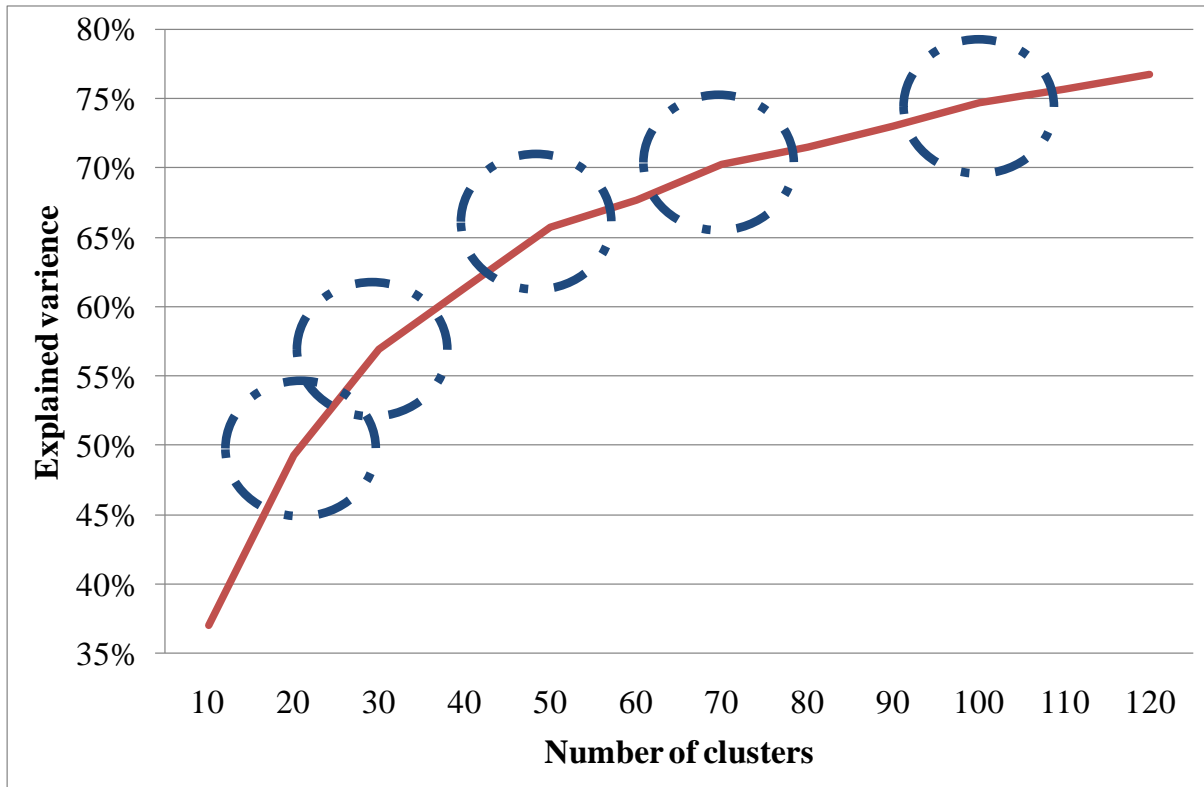
The forth group is made up from firms with high product orientation and favourable network position, but they have lower market orientation, organisational efficiency, provisional competitive advantages, financial and market and lobby force. Based on these facts, these firms got the title: C4- 'Domestic satellite companies'.

The fifth group contains firms with high market and product orientation and financial force. By their self assessments their network positions are very low, they don't strive for grabbing provisional competitive advantages, and they haven't significant market and lobby force. They are average according to organisational efficiency. Based on these facts, these firms got the title: C5- 'Independent and financially successful'. The most characteristic feature of the smallest group is the very low product orientation and the low provisional competitive advantage, market and lobby force. As opposed to these they possess the second-high financial force from the groups and they have also favourable network positions and organisational efficiency. Related to market orientation they are neutral. Based on these facts, these firms got the title: C6- 'Linked in and financially successful'.

### 4.5.3 Identifying clusters between 10 and 120

From the two opportunities of identifying the ideal number of clusters, after the discussion of the first possibility, I come to another one, namely I determine an ideal cluster number which explains high percentage of the examined phenomenon. I use again the elbow method, I didn't examine the ideal number of clusters between 2 and 10, but between 10 and 120 (Figure 28.).

**FIGURE 28:** Explained variance of clusters and elbows in case of 10-120 solutions



*Source of data: Calculated values based on VKK CEO databases 1996-2009*

Examining between 10 and 120 number of clusters, 5 elbows can be explored in the Figure 28: in case of 20, 30, 50, 70 and 100 clusters, whose explanatory forces are 49, 57, 66, 70 and 75 % respectively. Considering the earlier quoted recommendation of Lehmann at 16 and 34 numbers of clusters 45-60% explanatory forces could be reached. To reach significantly higher 75% explanatory force, 100 clusters are needed which contains in average groups with 10 elements. In order to the keep the manageability of the cluster numbers I choose 50% explanatory force which results in a 21-cluster-solution. The introduction of this is in Table 17. The 21-cluster-solution gives a more detailed picture of the organisational configurations, but the largest groups are similar to the groups at the 6-cluster solution.

**TABLE 17:** 21 performance configuration (strategy type)

	Market and lobby force	Financial force	Organisational efficiency	Market orientation	Product orientation	Network position	Provisional competitive advantage	N	%
K1	,474	,007	,277	-,174	-,102	,317	,095	216	21%
K2	,522	,139	-,096	,053	-,099	-,458	1,268	114	11%
K3	,048	,236	,077	,342	-,531	-1,143	-,447	107	11%
K4	1,011	,110	-,355	,977	,681	,161	-,463	89	9%
K5	-,445	,201	,296	1,232	,148	,773	,357	79	8%
K6	,225	,199	-,151	-,917	,376	,934	-1,250	64	6%
K7	,007	-,274	-1,101	-,774	-,672	-,450	,410	61	6%
K8	-,612	,054	,574	-,793	,866	-,781	-,922	58	6%
K9	-1,321	-1,740	-1,120	1,013	,286	,221	,099	38	4%
K10	-1,396	,113	-1,156	-,596	-,302	,916	,205	34	3%
K11	-,728	-1,692	1,776	-,116	,598	-,672	,377	28	3%
K12	-1,422	1,753	-,575	-,377	1,559	-,237	,177	28	3%
K13	-1,509	1,367	,972	-,540	,011	,812	,550	26	3%
K14	,790	-1,779	-,734	-1,475	,252	-,005	-,741	26	3%
K15	-1,259	-,700	1,912	-,600	-1,266	,246	-,004	19	2%
K16	-,800	,906	,167	1,729	-2,735	,204	-1,478	12	1%
K17	1,798	1,710	-,081	-,521	-3,458	1,853	-,544	4	0%
K18	-,868	-,235	,366	-,879	-5,221	,585	-1,011	3	0%
K19	2,486	-,612	,562	4,913	3,257	2,777	1,126	1	0%
K20	1,521	-,192	-2,597	-1,236	-1,220	-3,329	7,766	1	0%
K21	,204	1,074	-,440	2,328	1,156	-7,261	-2,961	1	0%

*Source of data: Calculated values based on VKK CEO databases 1996-2009*

In the following I interpret the first 16 configurations, because the K17-K21 clusters are too small. Each cluster can be characterized by the method used at the 6-cluster-solution.

Further on the 16-cluster-solution which classifies 999 firms opens up an opportunity to answer questions beyond the foregoing researches. If a firm is over performing in a certain dimension what are the consequences to the other dimensions?

It wouldn't be possible to reply to this question on the basis of the environmental school of Mintzberg, because the single dimensions are independent from each other, so we will get a tautological response, e.g. in order to reach better financial force the enhancement of the financial position is needed. On the contrary based on the configurational school, which I chose, at the interpretation of the real life configurations there is a possibility to display common occurrences (clusters), which allows understanding the phenomenon as a whole. So the given answers can serve as useful content, whereas for example strengthening the financial position is possible by enhancing the focus on products which can result in provisional competitive advantages, but this damages typically the market and lobby force, the organisational efficiency, the market orientation and the network position of the firm. So the alignment is particularly important (Kaplan and Norton, 2006).

**How can a firm have outstanding market and lobby force?** (In case of the strategies I sign between brackets on which cluster based on the statement, and I move on from the more often occurrences to the less ones at the introduction of the strategies.)

<b>Strategy</b>	<b>What is needed? (high value)</b>	<b>At the expense of what? (low value)</b>
A (K4)	Market orientation Product orientation	Provisional competitive advantages Organisational efficiency
B (K14)	Product orientation	Financial force Market orientation Provisional competitive advantage Organisational efficiency
C (K2)	Provisional competitive advantages	Network position
D (K1)	Network position	

It is worth highlighting the strategy C, whose lesson is that firms which are less embedded in different networks are able to transform provisional competitive advantages to better market and lobby force. So several weak connections help them in grabbing possibilities which state agrees with the results of Hite (2005) explored by qualitative methods.

#### **How can a firm have outstanding financial force?**

<b>Strategy</b>	<b>What is needed? (high value)</b>	<b>At the expense of what? (low value)</b>
A (K12)	Product orientation	Market and lobby force Organisational efficiency Market orientation
B (K13)	Organisational efficiency Network position Provisional competitive advantage	Market and lobby force Market orientation
C (K16)	Market orientation	Product orientation Provisional competitive advantages Market and lobby force

I highlight strategy A, whereas firms can reach very favourable financial position by incremental product dumping, which tallies with research results of Hortoványi et al. (2009). Strategy C opposed to strategy A suggest that focusing on markets can significant improve the financial force instead of focusing on products, according to the lesson of the survey this is characteristic for 12 firms, against the 28 firms with product focus.



### How can a firm have outstanding organisational efficiency?

Strategy	What is needed? (high value)	At the expense of what? (low value)
A (K15)		Market and lobby force Product orientation Financial force Market orientation
B (K11)	Product orientation Provisional competitive advantages	Financial force Market and lobby force Network position
C (K13)	Financial force Network position Provisional competitive advantage	Market and lobby force Market orientation
D (K1)	Product orientation	Provisional competitive advantage Market orientation Network position Market and lobby force

Strategy A and D describes the phenomenon of the organisation inability, that organisations strive for accumulating new resources, while it isn't justified by their market situation (Bakacsi, 1996). This phenomenon is similar to the (late) bureaucracy defined by Adizes (1992). In contrast, strategy B refers to the life situation of start-up businesses.

### How can a firm have outstanding market orientation?

Strategy	What is needed? (high value)	At the expense of what? (low value)
A (K16)	Financial force	Provisional competitive advantage Market and lobby force
B (K5)	Network position Provisional competitive advantage	Market and lobby force
C (K9)		Financial force Market and lobby force Organisational efficiency
D (K4)	Market and lobby force Product orientation	Provisional competitive advantage Organisational efficiency
E (K3)		Network position Product orientation Provisional competitive advantage

It is an interesting observation that in case of A, B and C strategies the high market orientation accompanies the lower market and lobby force, which can refer to those firms with lower bargaining power are rather obliged to customer centrality. D strategy is an exception of this which relates to that it is possible to reach better market and lobby force with the high market and product orientation.

This latter idea can be connected to the growth conception of Ansoff (1965), whereas diversification means the novelty of both markets and products, and this strategy is rather the challenge of the larger, stronger enterprises.

### How can be the product orientation outstanding?

Strategy	What is needed? (high value)	At the expense of what? (low value)
A (K12)	Financial force	Market and lobby force Organisational efficiency Market orientation
B (K8)	Organisational efficiency	Provisional competitive advantage Market orientation Network position Market and lobby force
C (K4)	Market and lobby force Market orientation	Provisional competitive advantage Organisational efficiency
D (K6)	Network position	Provisional competitive advantage Market orientation

Product orientation is a significant pledge of the firm which constraints its provisional competitive advantages, ability to grab opportunities. This refers to administrative behaviour which is the opposite of entrepreneurial behaviour (Stevenson, 1983). Besides market orientation and product orientation are the opposites of each other in case of 3 strategies, in one case they are complementary which give back the empirical picture of Ansoff growth strategies.

### How is it possible to reach an outstandingly high network position?

Strategy	What is needed? (high value)	At the expense of what? (low value)
A (K6)	Product orientation	Provisional competitive advantage Market orientation
B (K10)		Market and lobby force Organisational efficiency Market orientation Product orientation
C (K13)	Financial force Organisational efficiency Provisional competitive advantage	Market and lobby force Market orientation
D (K6)	Market orientation Provisional competitive advantage	Market and lobby force
E (K1)	Market and lobby force	

The connection between network position and market and lobby force has double meaning. On the one hand the high network embeddedness can mean a central (E strategy), on the other hand also a satellite role (B, C and D strategies). The strong relationships help basically to exploit opportunities, but too much strong relations can be a dam of the firm's development (Hite, 2005).

### **How can the provisional competitive advantages be grabbed?**

<b>Strategy</b>	<b>What is needed? (high value)</b>	<b>At the expense of what? (low value)</b>
A (K2)	Market and lobby force	Network position
B (K13)	Financial force Organisational efficiency Network position	Market and lobby force Market orientation
C (K7)		Organisational efficiency Market orientation Product orientation Network position
D (K11)	Organisational efficiency Product orientation	Financial force Market and lobby force Network position
E (K5)	Market orientation Network position	Market and lobby force

Strategy A refers to those firms with stronger market and lobby force that are able to exploit provisional comparative advantages better, which is in line with Penrose (1959). Strategies B, D and E contradict to this, they relate to that grabbing provisional competitive advantages are more typical for firms with lower bargaining power.

#### 4.5.4 Changes in performance configurations through the 4 surveys

There is a significant connection between the year and the performance configurations ( $\phi_6=0.262$   $p<10^{-8}$  and  $\phi_{16}=0.328$   $p<10^{-6}$ ). The distributions of the single groups are shown by years in Table 18 and 19.

**TABLE 18:** Distribution of the 6 cluster-grouping at the single surveys

Clusters	1996	1999	2004	2009	Total
<b>C1</b>	51	59	69	117	296
<b>C2</b>	56	60	44	41	201
<b>C3</b>	63	39	36	39	177
<b>C4</b>	35	43	50	23	151
<b>C5</b>	22	36	31	30	119
<b>C6</b>	15	10	24	16	65
<b>Total</b>	242	247	254	266	1009

*Source of data: Calculated values based on VKK CEO databases 1996-2009*

As it is seen in Table 18, all groups appear through the single surveys, but creating groups are dominant in certain years. While at the survey in 1996 C3 was the most frequent (and C2 and C1 appeared at almost similar level), in 1999 C2 was already the most frequent (C1 was at almost similar level, but the frequency of C3 fell). From 2004 C1 is the most frequent; moreover in 2009 44% of the firms included in the survey were in this group.

It is a further phenomenon that the significance of C4 has increased constantly from 1996 to 2004, at which Hortoványi and Szabó (2006b) pointed previously. Furthermore 2004 was particularly favourable for C6.

By continuing the examinations of the 16-cluster-solution based on the 21-cluster-grouping, whose distribution by year is introduced in Table 19, similar states can be concluded:

- K1 is the most frequent in every sample, but its frequency has doubled in the sample of 2009, moreover K8 is a special group of the survey in 2009. So in 2009 (1) beside firms with high market and lobby force (2) firms with high organisational efficiency and product orientation but simultaneously low market and lobby force, market orientation and provisional competitive advantage are overrepresented through the survey. The conclusion is from the comparison of the two types that firm population has polarized according to network positions and market and lobby force. Besides the most frequent strategy has strengthened.

- Through the survey in 2004 the summed proportion of the less frequent groups in the sample is higher: the K6, K9, K10 and K14 are significantly more frequent during this period than at the earlier or later surveys. The interpretation of the configurations is: (1) high network position and product orientation, low provisional competitive advantage and market orientation, (2) high market orientation, low financial, market and lobby force and organisational efficiency, (3) high network position, low market and lobby force, organisational efficiency market and product orientation and (4) high market and lobby force, low financial force, organisational efficiency and market orientation. Based on the comparison of configurations it is observable that favourable environmental conditions give free range to the creation of (strategic) variations.
- K2, which is able to grab provisional competitive advantages, among the surveys is in 1999 the most frequent. Further on K3 and K9 can be considered as configurations more frequent than the average. In details: (1) grabbing provisional competitive advantages and market and lobby force against less favourable network positions, (2) high market orientation, low network position, product orientation and provisional competitive advantages, and (3) high market orientation, low financial and lobby force and organisational efficiency. We can have a consequence as a lesson that the environment offered several provisional competitive advantages, which one part of the firms could exploit also without alliances.
- Looking back to the survey in 1996 the frequencies of K4, K5 and K7 configurations are above the average. So, (1) favourable market and lobby force at the expense of high product and market orientation, organisational efficiency and provisional competitive advantages, (2) high market orientation, network position and provisional competitive advantages, beside low market and lobby force, and (3) exploitation of provisional competitive advantages at the expense of organisational efficiency, market and product orientation, beside low network position. This latter configuration set an example of how a firm can cover up its weaknesses with its opportunities.

**TABLE 19:** Distribution of clusters with more than 10 cases

Ordinal number of clusters	1996	1999	2004	2009	Total
<b>K1</b>	43	43	41	89	216
<b>K2</b>	26	34	29	25	114
<b>K3</b>	14	34	26	33	107
<b>K4</b>	27	20	20	22	89
<b>K5</b>	37	14	10	18	79
<b>K6</b>	13	16	22	13	64
<b>K7</b>	20	18	17	6	61
<b>K8</b>	9	14	15	20	58
<b>K9</b>	8	12	14	4	38
<b>K10</b>	8	8	13	5	34
<b>K11</b>	8	8	4	8	28
<b>K12</b>	5	7	9	7	28
<b>K13</b>	6	7	8	5	26
<b>K14</b>	4	7	14	1	26
<b>K15</b>	6	3	5	5	19
<b>K16</b>	3	2	4	3	12
<b>Total</b>	237	247	251	264	999

*Source of data: Calculated values based on VKK CEO databases 1996-2009. At the introduction of clusters I took the 21-cluster-solution for basis, but I excluded clusters with less than 10 elements and clusters from number 17 to 21.*

Examining the configurations due to their temporal development it is observed that along the different environmental conditions several (at least 16) viable configurations can be taken for permanent. Furthermore the more and more favourable environment (1996-2004) led to the variation of configurations, while the crisis in 2009 enhanced the frequency of the main configurations. Based on these I accept the  $H3_{\text{population}}$  hypothesis.

***H3<sub>population</sub>: In a given environment more performance configuration are viable.***

#### **4.5.5 Control/descriptive variables' connection to the performance configurations**

Performance configurations, the majority owner, the main activity of the firm, and the territorial position are nominal variables, while the size is categorical variable and the export rate is ratio scale. (I recoded the export orientation by monotonous transformation to categorical variable in order to the better interpretation of the results: 0 – there is no export, 1 – export is under 20%, 2 – export is between 20 and 40%, 3 – export is between 40 and 60%, 4 – export is between 60 and 80%, 5 – export is above 80%).

Further on I introduce the results of the association in which it is explored whether there is a significant connection between the single performance configurations and several descriptive variables.

There is a connection between size and performance configurations at a 95% confidence level ( $\varphi_{\text{staff}}=0.200$   $p<0.034$ ,  $\varphi_{\text{assets}}=0.189$   $p<0.009$  and  $\varphi_{\text{revenue}}=0.173$   $p<0.027$ ), however it doesn't mean that bigger or smaller firms are more dominant in one of the categories. For example in each category number of employees between 50 and 300 are the more frequent, besides in case of C3 30.8% of the firms of the group are between 300 and 999 employees instead of the 22% expected value. In case of assets and revenue in all groups the small, middle-size and big organisations are typical too.

In relation to the export rate there is a connection to performance configurations at a confidence level above 99% ( $\varphi=0.378$   $p<10^{-13}$ ). Most of the C1 has no export and the export rate is also low at C4. C2, C3 and C6 show even distribution according to the categories of export rate, while in case C5 both very high and very low export activity is typical at the same time.

There is a connection between the majority owner and the configuration at a confidence level above 99% ( $\varphi=0.192$   $p<10^{-3}$ ). The domestic majority ownership is typical for at least the half of the firms in each group, but there are more significant deviations at the appearance of the foreign and state majority owned firms in the groups. The frequency of state majority owned firms is above the average in the case of C1, C4 and C5, while the foreign majority ownership is overrepresented at C2 and C3. Group C6 contains of domestic majority owned firms in more than two-thirds ratio.

There is also an association between the single clusters and the main activity of the firms ( $\varphi=0.192$   $p<10^{-3}$ ). Compared to the sample in case of C1 different service enterprises are over-, firms in manufacturing industry are underrepresented (although this is the most frequent industry with its 40%). Groups C2 and C3 are dominated by firms of manufacturing industry with a two-third majority (64.1% and 68.7%). In case of C4 and C5 agricultural and manufacturing industry firms are over- and traders are underrepresented. C6 includes firms of the construction industry and trade above the average, but their summed proportion is further on low (21.6% instead of the expected 16%).

There are no connections between the territorial position and the performance configurations at/above the 95% confidence level.

The results of the 6-cluster-solution are strengthened further by the examination of the 16-cluster-solution, at which there is a connection at 99% confidence level between performance configurations and the firm size, the export rate and the type of the majority owner, but there is no significant connection to the territorial position.

At the same time at the 16-cluster-examinations the rule of thumb has to be considered that at least 5 cases are needed in each cell of the crosstabs in order to get reliable results. According to this the 16-cluster-solution has to be narrowed down to 6-10 clusters. This generates significant distortion, so I didn't use these results, but at big samples this solution is recommended. According to the foregoing I examine the connections of the 6-cluster-solution in the next part.

## ***4.6 Testing hypotheses related to firms, the connection between environment, strategy and performance***

### **4.6.1 H1<sub>individual</sub>**

**H1<sub>individual</sub>: The exploitative firms perceive environmental uncertainty higher than explorative firms.**

At 95% confidence level (estimated significance level in brackets) there is a connection between the following strategies and the environmental factors:

#### **1) Exploitative strategy and the**

- a) domestic sales market at the present ( $p < 0.005$ )
- b) foreign suppliers opposite direction in the past ( $p < 0.008$ ), at the present ( $p < 0.030$ )
- c) domestic suppliers at the present ( $p < 0.045$ )
- d) technological development at the present ( $p < 0.014$ )
- e) social changes at the present ( $p < 0.023$ )
- f) domestic political changes in the past ( $p < 0.037$ ), at the present ( $p < 0.015$ )

#### **2) Explorative strategy and the**

- a) domestic suppliers opposite direction in the past ( $p < 0.038$ ), at the present ( $p < 0.006$ )
- b) social changes opposite direction at the present ( $p < 0.006$ )

The ambidexterity doesn't show connection to the sources of environmental uncertainty at a confidence level 95%.



Testing the hypothesis shows a dual picture, so it can be accepted with modifications, that exploitative firms evaluate primarily the uncertainty from domestic environmental factors as higher.

#### **4.6.2 H2<sub>individual</sub>**

***H2<sub>individual</sub>: The proactive firms perceive their environment less uncertain than reactive firms.***

At 99% confidence level there is no connection between the two factors. At 95% level it can be determined that firms which are able to influence environmental changes better, perceive the foreign sales environment ( $p_{\text{past}} < 0.038$ ,  $p_{\text{present}} < 0.051$ ), and the domestic suppliers less uncertain ( $p_{\text{past}} < 0.021$ ,  $p_{\text{present}} < 0.002$ ).

Based on the weak results and the low significance I reject the hypothesis. The results refer to that proactive firms perceive their environment also uncertain.

#### **4.6.3 H3<sub>individual</sub>**

***H3<sub>individual</sub>: The sources of environmental uncertainty have different impact on the configurations.***

There are several relations between the former determined performance evaluation dimensions and the perception of environmental uncertainty. I analyzed the connections at 99.9% (appendix 6.5. yellow highlight) and 99% (appendix 6.5. red highlight) confidence level with Spearman correlation coefficients. Based on this I got these results:

- Firms with better financial force, more effective organisation, and higher product orientation perceive foreign sales environment less uncertain, while higher market orientation and higher provisional competitive advantage are accompanied by higher environmental uncertainty from foreign sales markets.
- Enterprises with more effective organisation and high product orientation perceive the domestic sales market environment more uncertain at the time of the surveys, as opposed to the firms with high market orientation and provisional competitive advantage, which evaluate as lower this uncertainty factor.
- Firms with higher financial force evaluate as lower the uncertainty from capital and financial market changes than enterprises with lower financial force.
- The uncertainty from foreign suppliers affects more firms with higher market orientation than firm with lower market orientation.

- According to the technological development and the legislation there are no connections to the variables at the given significance levels.
- Firms with more effective organisation perceived social uncertainty at the time of the survey more uncertain, while firms with provisional competitive advantages evaluated it as lower.
- Firms with more effective organisation evaluate domestic political changes as more uncertain, while firms with high market orientation and provisional competitive advantage less uncertain.
- Enterprises with effective organisation (with modern decision making and information systems) perceive the present more uncertain than the past, while firms with provisional competitive advantages perceive the present less uncertain than the past.

There are several connections between the former determined performance configurations and the perception of environmental uncertainty. I examined the relations at a confidence level above 99.9% ( $p < 0.001$ ) with  $\phi$  and crosstabs. I obtained these results:

- In cases of C1, C4 and C6 the foreign sales market environment is less a source of uncertainty, in groups C3 and C5 the distribution is even, while at C2 the foreign sales environment is typically in a large measure an uncertainty source at the present as well as in the past.
- Examining at 99.9% confidence level uncertainty from domestic sales market environment shows relation to the single groups at the present. In 5 groups (C1, C3, C4, C5 and C6) the proportion of those, who perceive this factor in a large or extremely large measure as an uncertainty source is above 65%, while in case of C2 the proportion of these firms is below 40%. It is characteristic, that they take this uncertainty factor for of medium size. Furthermore at C6 15.6% (expected value 5.7%) of the firms in the group don't take this factor for an uncertainty source.
- There are no connections at 99.9% confidence level between the single group and the uncertainty perception from capital and financial market changes, foreign and domestic supplier, technological development, legislation and social changes.

- The uncertainty from domestic political changes affect at the present in middle or large or extremely large measure group C1, in small, medium, or large measure groups C2 and C4, no or in small or medium measure the group C3, and in relative even distribution the groups C5 and C6.

Based the results I accept the hypothesis.

#### **4.6.4 H4**

***H4: The explorative firms are able to recognize the environmental changes better then the exploitative firms.***

It can be stated at 99% confidence level that firms following exploitative strategy recognize environmental changes less ( $p < 0.000$ ), than enterprises following explorative strategy ( $p < 0.000$ ), or ambidextrous organisations ( $p < 0.013$ ). Based on this I accept the hypothesis.

#### **4.6.5 H5**

***H5: The better a firm performs, the better it can perceive and influence the environmental changes.***

Several dimensions of the performance evaluation are connected to the perception and the influence ability of environmental changes of the firms at 99% and 95% confidence level. Typically firms with higher market and lobby force ( $p < 0.001$ ), financial force ( $p < 0.000$ ), organisational efficiency ( $p < 0.001$ ), lower product orientation ( $p < 0.001$ ), and more favourable network position ( $p < 0.015$ ) are able to recognize and influence changes better.

Based on these results I accept the hypothesis.

There is no significant connection between the perception and influence ability of the environmental changes and the performance configurations at 95% confidence level. The proactive influence is an exception of the rule, while C1 and C2 firms were able to notify important environmental changes in advance, prepare of them in time and employ proper responses to them, even they strive for influencing consciously the environmental changes ( $p < 0.003$ ) in a measure above (15.6% and 13.4%) the average (11.1%), C3 and C6 (10.8% and 10.9%) around the average, while C4 and C5 firms (6.0% and 3.4%) below the average.

#### 4.6.6 H6

***H6: Exploration and exploitation are typical to different performance configurations.***

There are several relations between the strategy followed and the different dimensions of performance evaluation at 95% confidence level:

- exploitative firms possess less provisional competitive advantages ( $p < 0.012$ );
- explorative firms have typically stronger financial force ( $p < 0.011$ ) network position ( $p < 0.010$ ) and provisional competitive advantage ( $p < 0.034$ ) than the others who doesn't follow such strategy;
- there is no significant connection between ambidexterity and the configurations.

The configurations given based on the strategy followed and the performance evaluation can't be matched entirely, but explorative strategies are more frequent in case of certain performance configurations ( $p < 0.045$ ). The explorative strategy is above the average (51.1%) in case of C3, C4 and C5 groups (60.5%, 54.3% and 52.1%); while in the other 3 cases it is below the average. The difference is significant only at C3.

The exploitative strategy is characteristic for the two-third of the firms (68.4%), and the groups aren't different significantly, it is typical for each. On the contrary ambidexterity is manifested at a smaller proportion (29.2%) of the firms, but there is no significant difference between the groups. The 16-cluster-solution can be also interpreted in these cases, the conclusion is that there is a significant connection between the explorative strategy and the single clusters ( $p < 0.017$ ), while at the other two alternatives – in line with the above stated - there is no connection. It is 20% more frequent than the average in cases of K4, K5 and K12 (60.7%, 69.6% and 60.7%); while at the same percentage of the firms it is below the average, in cases of K8, K10 and K11 (36.2%, 38.2%, and 32.1%).

So, not the exploitation, but the exploration makes a real difference between the firms. The exploitation in itself isn't a source of competitive advantage, it could stop competitive disadvantage, while the exploration can be source of a competitive advantage for the firms. Based on this I accept the hypothesis modified, whereas only exploration and non-exploration are typical to different performance configurations.

In this chapter I introduced the quantitative research and its results in details. The following chapter contains the interpretation of the results and its wider position in literature.

## 5 DISCUSSION AND SUMMARY OF THE EMPIRICAL RESULTS

### 5.1 Summary of the quantitative research

#### 5.1.1 A broad view of strategic adaptation, ambidexterity and competitiveness

The broad view of the results of the strategic adaptation research is shown in Table 21. Its columns contains the summary of results from each periods and overall for the macroeconomy, environmental uncertainty, followed strategy, proactivity, connotations of the performance dimensions and performance configurations. There is a paradox in the 21<sup>st</sup> century and in the detailed description of the research results. The total results often shows that certain structures continuously change: “You can’t step into the same river twice’, on the other hand the whole population consist permanent elements: “Nothing is new under the sun’.

I identify the revealed paradox situation as the macro interpretation of ambidexterity, that is, certain companies’ ambidexterity doesn’t show up in the 20<sup>th</sup> century, but the corporate population. In this context the capability of the forecast of environmental changes is viable in some variations among different environmental conditions, however ratios of variations can be considered permanent among different environmental conditions. Similar can be told in connention with followed strategies. The rate of exploitation and exploration changes from year to year, but comparing the periods covered by the research surveys the stability of the structure can be discovered. In point of the dimensions of performance evaluation it can be determined that during each surveys the dimensions are filled with different content, different factors imply competitive advantages and yet the dimensions are robust and permanent formations.

**TABLE 20:** Ambidexterity in the level of population

Aspect	‘You can't step into the same river twice’	‘Nothing is new under the sun’
Proactivity	Environmental changes are perceived differently	Same structure during the examination period
Dimensions of evaluation performance	Different connotation in certain periods	7 robust dimensions
Followed strategies	Change from year to year	Persistent standards in 4 years cycles

**TABLE 21:** A broad view of strategic adaptation from 1992 to 2010

	1992-1995	1996-1999	2000-2004	2005-2009	Sum
<b>Macro-environment</b>	Stability	New growth path	Top performance	Decline	1 economic cycle
<b>Environmental uncertainty</b>	Extreme high in internal markets Low in external markets	High in internal markets Low in external markets	Moderate/high in internal markets Low in external markets	High - all sources of uncertainty	Internal markets seems to be more uncertain than external markets
<b>Followed strategy</b>	Exploration is increasing to 40%	Exploration is increasing to 64%	At the beginning of the period exploration is more common (71%), then Exploration is increasing to 56%	At the beginning of the period exploration and exploration are balanced, but from 2007 exploration decreases	In a 3-4 year period the pattern of the strategies followed by the companies are the same
<b>Proactivity</b>	The pattern of the capability of influencing the environment is the same on each period.				
<b>Connotations of the performance dimensions</b>	Public relations are negative Export means excellence Competitive advantage comes from economies of scope and low prices	Public relations are negative Export means excellence Financial power is connected structural efficiency High product orientation	Export means excellence Financial power is connected structural efficiency High product orientation Networking increases	Financial power and structural efficiency is connected flexibility Networking increases Competitive advantage comes from flexibility	7 robust dimensions
<b>Performance configurations</b>	Many strategic variables The role of networking is low	Many strategic variables Grabbing the short term opportunities The role of networking is low	The most strategic variables The role of networking is increasing	Retention of fewer strategies The role of networking is increasing	6 and 16 cluster solutions.

### 5.1.2 The results of hypotheses testing

The results of the hypotheses testing are shown in Table 22. All the 3 hypotheses for the population are accepted. In addition, 3 out of the 6 hypotheses for the firm level have been accepted, 2 have been modified, and 1 have been denied.

**TABLE 22:** The results of hypotheses testing

<b>H1<sub>population</sub>:</b> The economic growth on the macro level fosters exploration while recession retains exploitation.	approved
<b>H1<sub>individual</sub>:</b> The exploitative firms perceive environmental uncertainty higher than explorative firms.	Modified: The exploitative firms perceives the internal environment higher than explorative firms
<b>H2<sub>population</sub>:</b> The perception of the environmental changes and the capability to influence them is independent from the external environment.	approved
<b>H2<sub>individual</sub>:</b> The proactive firms perceive their environment less uncertain than reactive firms.	denied
<b>H3<sub>population</sub>:</b> In a given environment more performance configuration are viable.	approved
<b>H3<sub>individual</sub>:</b> The sources of environmental uncertainty have different impact on the configurations.	approved
<b>H4:</b> The explorative firms are able to recognize the environmental changes better then the exploitative firms.	approved
<b>H5:</b> The better a firm performs, the better it can perceive and influence the environmental changes.	approved
<b>H6:</b> Exploration and exploitation are typical to different performance configurations.	approved for exploration (p<0,05)

## 5.2 Value creation for the Hungarian and international research community

### 5.2.1 Value creation with 4 actions

The dissertation's primary aim was to add and improve our understanding gained from previous studies (Antal-Mokos and Kovács, 1998, Antal-Mokos and Tóth, 2001, Hortoványi et al, 2006 and Hortoványi and Szabó, 2006b) and as such, to highlight formerly hidden attributes. To achieve this, the four actions suggested by Kim and Mauborgne (2006: 46) were introduced (see Table 23).

**TABLE 23:** Value creation with 4 actions

<b>Eliminate</b>
Principal Component Analysis Counting the average of variables measured on an ordinal scale
<b>Reduce</b>
Control variables (7 instead of 10) Examine the central tendency Data reduction
<b>Raise</b>
The international foundation of the research The use of former studies Longitudinal approach Cross references Research scope Research design and methodology Transparency Subsamples Description of the control variables and the sample Missing Value Analysis Understanding the phenomenon
<b>Create</b>
Integrated research platform Simultaneous examination of the macro and the micro economy Multidimensional Scaling 7 robust performance dimensions Hypothesis development and testing Identification and description of Explorative, Exploitative and Ambidextrous strategies Differentiation of larger, more stable and smaller, more changing structures Recognition of ambidexterity on micro and on macro level



### **5.2.2 Questioning the Contingency Theory**

In my earlier research (Szabó, 2008) I interpreted the possible adaptation strategies of the participants of the bio-ethanol industry in regard of the changes induced by the evolving industry itself. My researches covered the following areas: (1) Interpretation of the environmentally conscious and innovative business opportunities in the oil industry, which appear as environmental challenges, and then (2) Integration of most important categories of strategic answers given to the environmental challenges found in the literature. Finally (3) the interpretation of the adaptation strategies based on the example of the participants of the bio-ethanol industry could take place.

Summarizing the learning points of the adaptation strategies found in the bio-ethanol industry made it possible to disprove the standpoint of the contingency theory, which states that there is only one appropriate (organisational) and efficient solution to a certain environmental conditions (Dobák and Antal, 2009). Contrary, I managed to confirm the supposition of the Configurational School, which states that more than one integral adaptation strategy, strategic archetype can be efficient and successful depending on the context and the organisation (Miller and Friesen, 1977, Miles and Snow, 1978).

Beyond that, I could also point out that all the existing adaptation strategies can be viable in certain stages of the life cycle. The justification of this hypothesis, revealed by qualitative methods, has not happened yet with quantitative tools, which I compensated in the empirical researches of the dissertation. My results justify that firms can respond to the challenges of the external environment with different but still viable strategies and configurations.

Beyond the cross sectional, same time analysis of the environmental conditions it is worth shifting to the longitudinal analyses covering more periods of time. It is an interesting question regarding that, whether the same strategy types would be dominant in different environmental conditions as well. Hungarian researchers, for example Antal-Mokos and Kovács (1998), Antal-Mokos and Tóth (2001), and Hortoványi and Szabó (2006b) has already tried to answer the question partially.

The above mentioned researchers examined nearly identical variables (in the last two cases the variables were completely identical), analyzed samples with similar composition (all of them used the current database of the Hungarian competitiveness research program) and although they used identical research frameworks, they created different (only partially overlapping) strategies.

It makes the longitudinal comparison of the strategy types more difficult, which I dissolved in my dissertation and suggest a new and integrated methodology instead of the analysis of fragmented samples.

The integrated application gives an opportunity for examining whether the different strategies appear in the same ratio or not at different environmental conditions. The assumptions of Configurational school that different configurations and strategy types suit successfully the different environmental conditions was also proved by my empirical study presented in details in my dissertation.

Furthermore, my results also confirmed the assumption of Burgelman (1991), Pettigrew (1985, 1987) and Dickhout et al. (1995) that firms during crisis tend to concentrate on the strengthening their existing position and their exploitative activities, and hence, the most frequent strategy types will be retained. In contrast, under favourable conditions new strategy variations emerge and the ones with lower performance are also proven to be viable.

### **5.2.3 Few additional interesting conclusions**

At the empirical examinations I examined configurations and adaptation from a top management point of view. The “self-importance” of the top managers and the production viewpoint were the most frequent in the sample 1999. It is an interesting coincidence that this period was the most prosper economic environment compared to the former period. Moreover the production viewpoint from 1999 was basically transformed by the economic crisis, and resilience would be the most important competitive advantage.

The role of the single firm activities has significantly changed during the years. Export activity was during the first two surveys separate competitive dimension, competitive factor, but now the lack of export activity is considered as a competitive disadvantage. It is to be remarked that while in 1990 the export activity was inseparable from the high product quality and technological quality level, now it doesn’t refer to special excellence.

The role of the state and the judgment of governmental relations have changed a lot during the almost two decades. Sales to state meant in 1996 a negative, a backwardness attributive, it was accompanied by backward structure and financial force, which is emphasized a lot by, Bojár (2005) too.

Nowadays sales to state and lobby activity contributes to the financial force of a firm, however is further on under discussion that how much “easy money incomes” distort the competitiveness of the economy and the firms.

It is important to underline that in case of firms with high market and lobby force the level of customer need satisfaction fell typically during the survey, which can refer back to the inability of the firms and the misuse with superior strength.

The conversion between the performance dimensions is an important question at every configuration. Typically firms aren't able to dominate their competitors along every factor, so it is necessary to find certain primness focuses. Within it is an important result that it isn't recommended to primarily endeavour to have organisational efficiency, because it is accompanied by low performance related to the other dimensions. There is also exception, when the efficient organisation helps in grabbing the provisional competitive advantages, but it is important to know the common occurrence of the single dimensions during formulating winner strategy.

Where does cost-efficiency come from? The different surveys have different answers to this question. While in the 1990's economies of scale and economies of scope played the major role, then to the middle of the period the up-to-date and efficient information systems (economies of speed) had this role. For today cost-efficiency comes clearly from the flexibility and resilience (economies of speed, competence and learning) (I categorized economies based on Zahn, 2000).

Larger firms follow explorative strategy (growth or attacking) with higher probability than smaller firms, which is in line with the concept of Penrose (1959): larger firms possess advantage in advance while growth raises new growth opportunities.

In case of the perception of environmental uncertainty, the uncertainty of foreign markets in certain industries (manufacturing industry and agriculture) is higher, which refers indirectly to that these industries more interlinked in international circulation.

Related to the methodology it is a worth to notice, that the multidimensional scaling explains at least 95% of the examined variables besides excellent fitting, while the principal component analysis explains through the former researches typically only 50-60% (Eigenvalue above 1). This methodological difference results in significant improvement in the reliability of the research results.

By enlarging the sample the potential number of clusters raises proportionally. The phenomenon is described by a large extent some well-defined archetypes.

### **5.3 The practical meaning and value of the results**

The committee of the thesis proposal recommended interpreting my empirical results by practicing professionals, corporate managers, because this can enrich the value of the researches. In the course of the defence they suggested 8-10 managerial interviews or 1 focus group to further examine certain part of the dissertation.

Taking the recommendation, I consulted practicing professionals, and then I recorded 41 managerial opinions in connection with the results of three fields of the research: (1) assessment of the environmental uncertainty, (2) the strategies followed, ambidexterity, exploitative and explorative activity of the organization, and (3) competitive performance goals and configurations.

In the following part I present the methodology and the results of the qualitative research and I compare them with the results of the quantitative research.

#### **5.3.1 Methodology of the qualitative survey**

According to Miles and Huberman (1994: 6) “qualitative research is conducted through an intense and/or prolonged contact with a ‘field’ or life situation. The researcher’s role is to gain a ‘holistic’ (systematic, encompassing, integrated) overview of the context under study: its logic, its arrangements and its explicit and implicit rules’.

Through the qualitative research the researcher attempts to collect data “on the perceptions of local actors “from the inside’ through a process of deep attentiveness, of empathetic understanding, and of suspending “bracketing’ preconceptions about the topics under discussion. The researcher can isolate certain topics and expressions, which can be reviewed, but they have to be preserved in their original form through the research.

The qualitative research methods provide understanding of the problem setting and are based on small samples. The qualitative research methods can be divided into two groups. On the basis of whether the respondents know the research objectives we can differentiate direct and indirect methods (Malhotra, 2008).

In the course of the techniques employing a direct approach, the respondent knows the objective of the research, and answers in consciousness of that, while the projective (association, completion, construction, expression) techniques, which are used in case of indirect approaches, encourage the respondent to express his/her motivations, opinions, attitudes or feelings in connection to a certain topic without being influenced by the objective of the research.

I rejected the usage of the latter, although this technique is exceedingly suitable for attitude research, in case of the present research the required information are of the different type, so the employment of this technique can lead to significant distortions. Moreover the required information were obtainable by a direct method, there was no need for hidden questioning.

The two most frequently applied way of the direct qualitative research methods are the focus group and the depth interview. Focus group is an unstructured and direct interview, where a skilled moderator talks to a small group of respondents. The members of the group usually are homogenous. Its advantages are the group synergy, which allows deeper insight into a certain topic than single answers, new ideas arise easier, and more people can be questioned at the same time (Malhotra, 2008).

The depth interview differentiates from the focus group mostly in that; the questioner speaks with only one interviewee. Naturally in case of paired interviews or triads there 2-3 respondents, but in case of single or expert interviews there is one respondent. Compared to the focus group the interview is able to explore a certain problem, single answers and cases deeply, its further advantage is that the respondent doesn't feel social pressure on indentifying on the group opinion. At professional questioning, deeper problem exploring, and sensitive topic it is highly recommended to use this technique (Malhotra, 2008).

Due to the presented advantages and disadvantages I chose putting in the centre single opinions compared to the group technique, and tried to minimize the disadvantages of the method. The most important disadvantage of the interviewing is that the answers can depend on the questioner. To reduce this factor, I fixed the main line of the interview in advance, so I burdened the fields, which I take for important to explore during the interviews. On the other hand during the interpretation of the results I treated the results of the quantitative research as my presumptions, so I tried to estimate my effect on the answers, and I drew up my opinion in the light of these (Gelei, 2002).

### **5.3.2 Definition of the unit of analysis, population, and sample**

During the case study research the unit of analysis is needed to be determined (Gelei, 2002: 169). In case of this research it equals to the population definition used in marketing research. The population is the aggregation of those elements, which have a common characteristic and meet the objectives of the research problem (Malhotra, 2008:364). In this case the units of analysis are Hungarian enterprises, firms, that are lesser or greater affected by environmental changes, or they are able to influence them.

The sample is selected from the population. During qualitative research the sampling is not statistical, but primarily theoretical. As opposed to the statistical sampling, the qualitative sampling is characterized by (Miles and Huberman, 1994; Gelei, 2002: 169-170):

- small sample and context specific (as opposed to the big sample, and ignoring the context);
- on purpose and expediently selected sample (as opposed to the random sample selection);
- theoretically oriented sample (as opposed to the representativeness);
- continuously, step-by-step evolving sample (as opposed to the in advance defined sample).

In case of the present research the emphasis is not on drawing the conclusions which are true for the whole population, after the examination of the sample. So there is no need for representative sample, and it isn't a requirement also to select the cases random (Malhotra, 2008), so the sample wasn't selected by random selection method. At sampling I endeavoured to get a sample which is different from as much as possible points of view. I employed judgmental sampling using the control variables from the quantitative research (especially size and industry).

A drawback of the diversity of the sample, that it is more difficult to find common points between the opinions and ways of thinking of the respondents. This drawback can be eliminated or reduced by that during the interpretation process the researcher tries to find those points which can be connected to each other from some point of view, ranked side by side, or which aren't connected exclusively to one respondent and it is worth questioning them from other population elements through a further research.

### **5.3.3 The script of the qualitative research**

The questioner and the data analyst have significant effect on the interviewing process and the interpretation of the interviews. In order to reduce the distortion, I used the same script for surveying the managers' opinion, from which I didn't depart or only in a small measure at the single cases. Table 24 shows the steps of the collection and interpretation of the managers' views.

**TABLE 24:** The script of the qualitative research

<b>Data survey</b>	
<b>Preliminary</b>	The context examination of organizations included in the research
<b>0-10 minutes</b>	Introduction of the general results and objectives of the research General and executive introduction of the organization
<b>10-30 minutes</b>	Introduction of the quantitative research results in relation to environmental uncertainty Executive interpretation of the sources of environmental uncertainty, exploration of its own uncertainty factors and life situation
<b>30-55 minutes</b>	Introduction of the quantitative research results in relation to the strategies followed Managers interpret exploitation and exploration and their connection for their own firms They assess what kind of opportunities the global crisis opened up for the firm
<b>55-70 minutes</b>	Introduction of the quantitative research results in relation to performance configurations and goals CEOs present their own performance goals and then rank the 7 performance goals Introduction of strategies recommended in order to reach outstanding performance
<b>70-75 minutes</b>	Conclusion, reflection on survey
<b>Data recording</b>	
<b>Before survey</b>	Making notes based on online and personal sources
<b>During survey</b>	Handmade notes
<b>Directly after survey</b>	Completion of handmade notes, digital recording
<b>Data analysis</b>	
<b>After all surveys</b>	I analyzed data summarized and not after the single surveys Determination of methodology for data analysis During data analysis looking for, collecting opinions that harmonize with the quantitative research results, that are interpret or complement them, or depart from them, perhaps disprove them.

The analysis of the surveyed data during the qualitative research differentiates from the quantitative researches, because there are many ways to start, tell the truth it is the researcher's task and responsibility at the same time, which method he/she chooses (Ryan and Bernard, 2003, Strauss and Corbin, 1990, Miles – Huberman, 1994, Maxwell, 1996). It is advisable to develop a unique model for every research, than to squeeze the interpretation process into the frames of another research. As the primary objective of my qualitative research is the interpretation of the quantitative research results, it was done based on this:

1. Mapping my first impressions and defining the Big Picture
2. Functional analysis of the given answers related to the single topics, assembling the “puzzle”, defining topics.
3. About what they avoided to talk...

#### **5.3.4 First impressions and the Big Picture, recognizing Mintzberg’s elephant**

During reading the notes I tried to work through the text from several points of view, and determine topics connected to them, or taboos. These viewpoints were the “what happened”, “what was done”, “how they felt”, “what they suggested”, “how the environment reacted”, and ‘about what they avoided to talk’. The viewpoints bring partly the same topics up, but in different interpretations. I felt little so as the blinds in Mintzberg et al. (2005) Strategy Safari, who want to describe a whole elephant so each of them touch a different part of it, but don’t see the whole elephant. No wonder that their picture about the elephant can differ very much from each other.

Considering being lost in the details, I endeavoured to determine one idea in the umpteenth reading, what strategic adaptation and ambidexterity mean for the interviewees. The respondents pointed at that the strategic adaptation is an effort to grab an opportunity (or even threat), which has novelty content compared to the competitors, and with its help the firm is able to survive. The interviewees expressed the certain parts of the definition so:

*“The more new products I bring to the market and the more customers I am able to convince of using these, the more my turnover increases.” (3. respondent)*

*“Due to the continuous innovation we could improve our position compared to our competitors.” (11. respondent)*

*“Penetrating the places of several hotels went bankruptcy. Novelty, special offer.” (15. respondent)*

*“For a Hungarian developer, producer firm, which has own products, the biggest uncertainty despite the crisis is that, when its product range is “attacked” by a Chinese manufacturer. Unfortunately it already occurs at special products too.” (22. respondent)*

*“Many competitors, who focused not on quality, rather on easy money-making have disappeared. Their customer base got free. Who now survives, deserves more trust – this is a purifying process.” (37. respondent)*



*“Everybody offers the same on the market, so the big difference can be in the how.” (38. respondent)*

After defining the Big Picture the identification of the puzzle elements could come, which serves also for the controlling of the picture. Moreover these topics specify the further practical interpretations of the quantitative research results. The examined key topics are:

- What are the sources of environmental uncertainty for CEOs?
- What are the strategies followed by firms?
- What kind of performance goals does the enterprise have?

### **5.3.5 What are the sources of environmental uncertainty for CEOs?**

The following categories were evolved through the qualitative surveys (numbers of the mentioning are in the brackets):

- Markets (65)
- Finance (45)
- State/EU regulation and politics (44)
- Managing the enterprise (35)
- People (31)
- Suppliers and partnerships (25)
- Competition (18)
- Technology (14)
- Others (weather, situation of SME-s, traffic, education system)

The markets, finance and regulation, and suppliers and technology are directly analyzed categories also through the quantitative research, the competition is through performance configurations indirectly examined factor, but the managing the enterprise and the people draw our attentions to a new field.

The following quotes illustrate well, that the uncertainty – beyond the employed at the quantitative research – can be emerged not only from the external environment of the firm, but internal elements can be also dominated.

*“The basis of the operation and economy of the whole investment is that we find 30-40 manager colleagues.’ (24. respondent)*

*“Our enterprise is still in the research and development phase, so the “inventor” has an important role in the progress, whose state of mind is very unstable. His careless declarations in the press (which are pushed off from reality in a huge measure) harm the judgment of the project by economic and political leaders a lot.’ (36. respondent)*

*“From 4 women colleagues 3 are engaged, they may have a baby within 1-2 years.’ (41. respondent)*

In the people category the owners, the managers and key employees and the attitudes and abilities of the employees appear. The managing the enterprise is a more complex category, which basically refers to that the managing the enterprise is uncertain for itself, it contains several uncertainty factors the business idea, the business model, the organizational structure etc. and those viability. The people and the managing the enterprise categories are able to be matched in this interpretation to the soft and hard parts of the management and leadership. So the source of the internal uncertainty is related to the managers and the level of management.

Briefly summed up, based on the practicing professionals’ picture of environmental uncertainty it can be determined that the reason for existence of the through the quantitative surveys employed factors are strengthened and completed by the internal environmental uncertainty of the firm, which can be led back primarily to the quality of the firm’s management.

### **5.3.6 What are the strategies followed by firms?**

Within this question the analysis of two questions comes to the front: (1) What is the connection between the exploitative and explorative activities, and (2) How did the global crisis influence the business strategy?

In relation to the first question, all 41 managers explained the exploitative and explorative activities in the operation of his/her enterprise. There were managers who give more details about the exploitation and who give more details about the exploration, but both phenomenons can be interpreted in every firm.

*“The resources which we save by removing certain activities we use for development of old and new products.” (9. respondent)*

*“We wanted to introduce one of our existing services in a new export market, but for this additional development was needed, which further strengthened our position on our existing market too.” (11. respondent)*

*“We can plan; complete our new products by using our existing services. We can estimate the market by using our existing connections.” (31. respondent)*

The qualitative research pointed out that ambidexterity, the coexistence of exploration and exploitation at the same time refers to the proper operation of the firm, but it can be declared based on the results of the quantitative research, that only a smaller proportion of the firms are able to find the proper balance between the two factors.

The duality appears remarkably in relation to the crisis. The global crisis was for one part of the firms an obstacle, for the others a favourable opportunity.

*“After the crisis people were unsure what the real value is. Our service gives an internal, eternal value, which will be always there if it is needed. Nobody will be able to take it away.” (1. respondent)*

*“There weren’t any new opportunities, because the demand for the marketable products and the ability to pay has reduced.” (3. respondent)*

*“It was an opportunity to take over the markets of the less effective, due to the crisis quickly capitulating competitors.” (13. respondent)*

*“The clients are more opened for switching service providers, so it is easier to attain the offer.” (16. respondent)*

*“The price reductions in the constructive industry made investment cheaper.” (23. respondent)*

Based on the opinion of the interviewees those firms were able to grab the opportunities in connection to the crisis (e.g.: decrease in competitors), which possessed from the beginning a stable financial model or were able to balance the finance of the firm in the earlier part of the crisis, primarily by efficient cost-reduction programs. The in advanced planned and properly prepared growth or investment strategy was mentioned as additional success factor, because markets can be attacked easier and investments are can be executed cheaper.

### 5.3.7 What kind of performance goals does the enterprise have?

To answer the question I used the quantitative research results as a base and ask for the respondents to rank the identified 7 performance goals. On the basis of the answers the performance motivations of the firms differentiate significantly, nearly there aren't same orders of ranks. Besides market and lobby force, the organizational effectiveness and the market orientation are typically important. The network position and the instant competitive position are typically not important; the assessment of product orientation is neutral. The financial force divides the opinions of the respondents; it is important for several respondents, but it is also not so important for other several respondents.

It can be an interesting statement that those firms signed the financial force as an important performance goal, which possess very weak financial structure and feel financial uncertainty significant. Firms in better financial position typically would like to upgrade primarily the market and lobby force and market orientation or the organizational effectiveness and not the enhancement of the financial force.

It is an important lesson of the quantitative survey that those firms which committed themselves to one idea are less financially successful than those who committed themselves to entrepreneurship. The financially more stable enterprises reported that they had several opportunities during the realization of the original idea, which proved to be further more mature on business, so they altered the original idea or even gave it up.

Besides the firms expressed their performance goals colourfully, which can be led back to the identified basic categories. Here are some examples:

*“We basically aimed the growth and it worked. More concentrate sales and new fields, strengthening certain branches of business.” (7. respondent) (market and lobby force, and market orientation)*

*“The global crisis influences the life of great part of people significantly. We offered solutions for stress situations coming from this.” (34. respondent) (market and product orientation)*

*“Establishing a new organisational form.” (35. respondent) (provisional competitive advantage and organisational efficiency)*

### **5.3.8 About what they avoided to talk...**

There are some uncharted sensitive topics, which managers didn't speak gladly or spoke rather indirectly about. In relation to the environmental uncertainty a former hidden dimension has turned up and has become identifiable through the analysis of the strategy followed and the performance goals.

For managers it was a source of uncertainty that employees didn't do work properly, truly there aren't proper employees in the labour market, on the other hand the firm is founded on a very good idea, but the market doesn't value it in accordance with the expectations, further on the business structures or the attitude of the partners aren't suitable.

Several managers said that his/her firm didn't have adequate income and cost structure namely its finance model wasn't in order. However upgrading the financial performance is an important aim for these enterprises; they aren't able to work out a proper construction referring to this. It damages further their prospects that by their own admissions they aren't able to rely on external partners, so they aren't able to invoke external 'help', which isolates them both from consultants and investors.

On second thought the respondent didn't go around something else, than the basic managerial functions; planning, organizing, leading and controlling. Namely the manager describes the inadequacy of the managerial functions, gives an account of his/her managerial uncertainty, which leads to cognitive dissonance. In so far the espoused theory and the theory-in-use differ from each other, the aspirations to resolve the resulting cognitive dissonant situation can have different outcomes (Bakacsi, 1996).

We obtain several beliefs which express not only conclusions of the connections between the things and features, but also express evaluative statements – form a judgment of good and bad, positive and negative. So values are basic beliefs which reflect our choices and preferences referred to the final aims of human life (self-actualization, liberty etc.) or the widely understood way of life (honesty, friendship, bravery). So at the determinant decisions of our lives, in choice situation we prefer always the same aims and situations to others.

As values are mostly irrational – although we tend to consider ours rational – and they mostly don't form a consistent value system – it is possible that we have to follow contradictory values – so it isn't also surprising that it occurs that people express something else than what they truly follow. When this happens we act against our espoused theory and there will be a contradiction between our behaviours, internal tension arises in ourselves.

We have a strong urge to reduce tension; we try to justify, explain our behaviour. We do it in order to have again consistent thoughts, feelings.

We can resolve the cognitive dissonance before the current act, if we can convince ourselves that the planned act “serves a good end and so justifies the means’. At many times we act too fast to consider our every single act and compare them to our value system. Then we have only a possibility to dissolve our “guilty conscience’ after acting.

We can differentiate three basic “strategies’ for resolving the cognitive dissonant situation: (1) reception, internalization of objective reality; (2) neglecting of objective reality; and (3) reducing the contradictory character by introduction of new reference points.

So there are three opportunities to resolve the managerial uncertainty of the respondents: (1) the manager recognizes and accepts that he/she isn’t a professional, but an instinctive manager (reception of objective reality), or (2) the manager holds the environment responsible for the inadequate results (neglecting of objective reality), or (3) he/she doesn’t take it for a problem, because the every actor of the industry acts in a similar way (introducing new reference point).

### **5.3.9 Summary of the qualitative research results**

In course of the qualitative analyses I set sights on the examination the three major fields of my quantitative results (uncertainty, strategy, performance), and the practical interpretation of the results. On one hand the qualitative surveys acknowledged the results of the quantitative researches; on the other hand they enriched the results of the dissertation, whereas:

- It is also important to take into account the internal uncertainty primarily coming from management, beside the external uncertainty factors
- Firms can act during their daily routine exploitative and explorative too, but the proportion of these is significantly different at the single firms, based on that they can be classified along the categories compatible with the quantitative research.
- The performance goals of the firms shift to strengthening the organizational force, after reaching proper financial stability (market and lobby force, organizational effectiveness).

## ***5.4 Assignment of further research questions and related disciplines***

### **5.4.1 The linkage of the dissertation to other disciplines**

The investigation of strategic adaptation, ambidexterity and competitiveness is based on the foundation of management science that puts the environmental adaptation and influence of enterprises and their population into the centre. It investigates the connections between the internal and external environment from the perspective of the management, according to the philosophy for which the scientific background of the Institute of Management of Corvinus University of Budapest stands for: in Environment – Strategy – Structure – Behaviour – Performance dimensions (Antal-Mokos et al., 1997, Bakacsi, 1996, Balaton et al., 2007, Dobák, 1997, Dobák and Antal, 2009).

Strategic adaptation which investigates environmental adaptation and influence is not an individual scientific area; however, partially it is also the aim of this dissertation to deliver valuable results to other economic and organisational scientific areas, more accurately within the management and organisational sciences, and to show possible connections to them.

The framework of the dissertation is not wide enough for introducing all potential connections, but I raise the attention to some common questions. The investigation of strategic adaptation, ambidexterity and competitiveness shows strong connection to the following areas (in alphabetical order):

- Corporate Entrepreneurship
  - How to sustain the success of existing business areas and the organisational support of new areas?
- Entrepreneurial Management
  - How long can be considered proactive individual companies and their leaders?
- Entrepreneurship
  - In what ways can enhance the growth?
- Organisational Behaviour
  - What are the leadership skills necessary to actively influence the environment?
- Organisational Design
  - What is the structure supporting the exploration, discovery and ambidexterity?
- Organisational Development
  - How to ensure the commitment of organizational members to the configuration's goals and strategy?
- Organisational Studies
  - Examining the phenomenon from a different paradigm, what (other) conclusions can be drawn?
- Strategic Change, Change Management
  - How to manage the shift between configurations?
- Strategic Entrepreneurship
  - How can be a company both efficient and effective?

#### **5.4.2 Ambidexterity and growth**

The qualitative research of the dissertation pointed out that companies do both exploiter and explorative activities, but their rate and the success are significantly different. Ambidextrous organisations in the context of the quantitative research of the dissertation can be considered the transitions between exploiter and explorative strategies, rather than an independent hybrid that make use of the advantages of the two strategies. On the contrast ambidexterity refers to the permanent and variable elements of the configurations' structure in the level of population. The bigger the population, the bigger the direct competition among the companies, however the survival of the population is more likely as the patterns taken up in the global finance and market crisis have proved that.

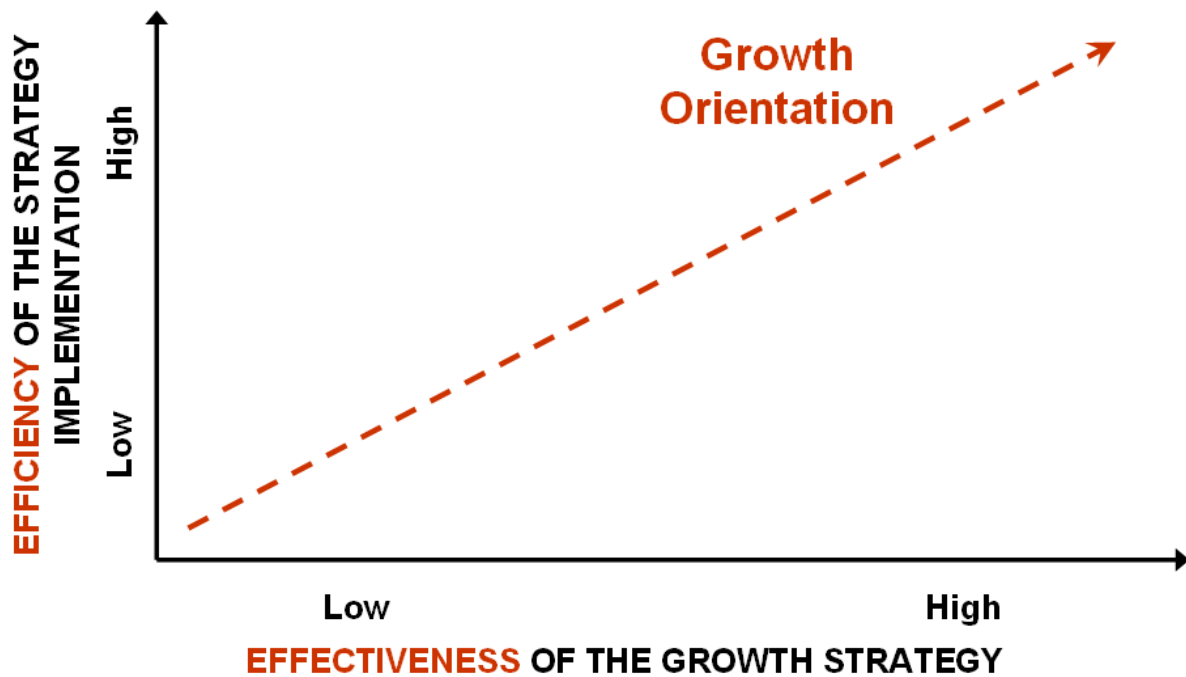


During the analysis of ambidexterity the explorative activity has gone hand in hand with bigger performance in finance power, network position and momentary competition positions. These imply that it is necessary to find the profitable business model first, and after that can come the growth of the company. In the further examination of ambidexterity I focus on the quantitative changes as well, unlike the majority of strategic management researches where the dependent variable of strategic management is only short term quantitative change (Hitt et al, 2001: 29).

The phenomenon of entrepreneurship has been researched for a long time, but it still doesn't have commonly accepted foundations (Aldrich, 2005, Aldrich and Baker, 1997). The biggest accordance appears in connecting, almost identifying the concepts of growth and entrepreneurship, though they are not equal (Davidsson, 2004). In the literature of entrepreneurial theory, growth is derived from the exploitation of the opportunity and aimed at efficient, innovative changes. Contrarily, entrepreneurship research deals only a little with efficiency, therefore it is worth combining strategy with entrepreneurship (Schendel and Hitt, 2007).

In the last sentences of the dissertation I realize the junction of strategy and entrepreneurship through the pattern of growth, hence it is not the concept of strategic entrepreneurship that I use, but that of strategic growth management which emphasises more the common linking points between them. Strategic growth management indicates the necessity of efficiency and effectiveness at the same time. Efficiency principally refers to the quality of the realization of the strategy, while effectiveness refers to the quality of the growth strategy, that is how much an organisation influence (through their products and services) the costumers' habits, to what extent it shapes the consciousness and the behaviour. The relationship between efficiency, effectiveness and growth is demonstrated on Figure 29 which was inspired by the pioneer research by March (1991).

**FIGURE 29:** The connection between efficiency, effectiveness and growth



Revealing the connection between efficiency, effectiveness and growth for example might happen with the help of utility graphs similarly to the utility term used in economy. The graph like representation might help to understand how much efficiency and effectiveness can be regarded substitutes or complements in regard of the contribution to the growth of the enterprise. During the dissertation I suppose that if a company can realize both on a high level then the growth orientation will be higher as well. The exact exploration of the relation of efficiency, effectiveness and growth exceed the borders of this dissertation.

\* \* \*

Summerizing it, the dissertation was born as a result of (2+)5 years of scientific preparation and research. I believe that the research questions in focus are important and timely, the research design and methodologies used are proper and up-to-date, and the contributions are valueable for scholars, practitioners and policy makers on a national and international level.

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## 6 APPENDECIES

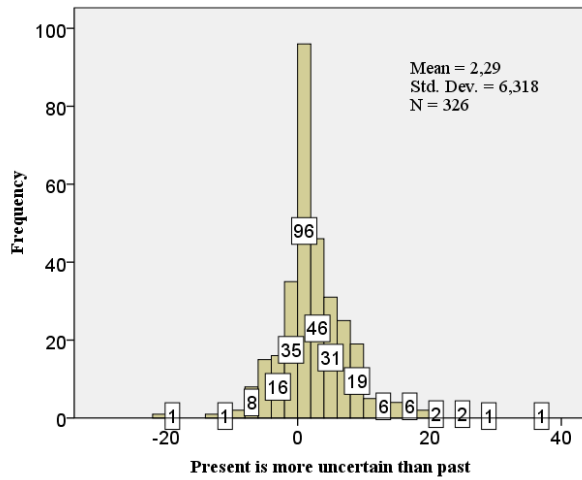
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## **6.1 Changes in the Consumer Price Index**

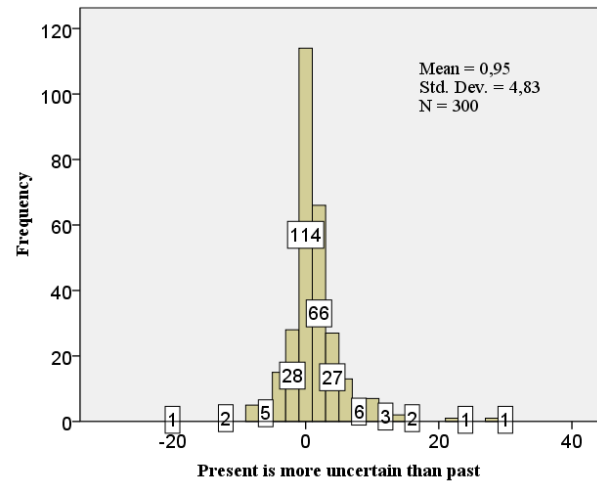
<b>Year</b>	<b>Consumer Price Index compare to previous year</b>
<b>1993</b>	<b>122.5</b>
<b>1994</b>	<b>118.8</b>
<b>1995</b>	<b>128.2</b>
<b>1996</b>	<b>123.6</b>
<b>1997</b>	<b>118.3</b>
<b>1998</b>	<b>114.3</b>
<b>1999</b>	<b>110.0</b>
<b>2000</b>	<b>109.8</b>
<b>2001</b>	<b>109.2</b>
<b>2002</b>	<b>105.3</b>
<b>2003</b>	<b>104.7</b>
<b>2004</b>	<b>106.8</b>
<b>2005</b>	<b>103.6</b>
<b>2006</b>	<b>103.9</b>
<b>2007</b>	<b>108.0</b>
<b>2008</b>	<b>106.1</b>
<b>2009</b>	<b>104.2</b>

Source: MNB, 2010

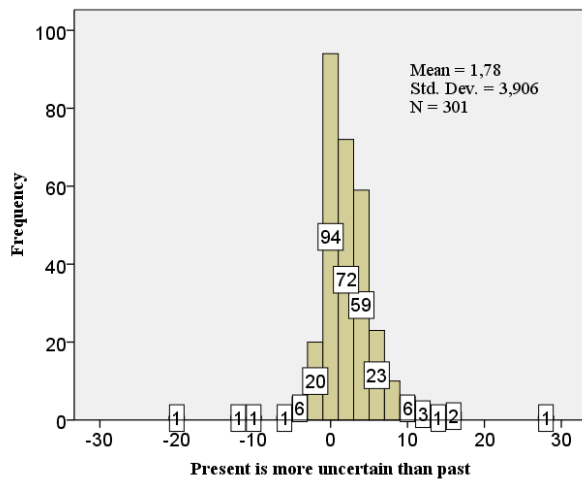
## 6.2 Perception of environmental uncertainty



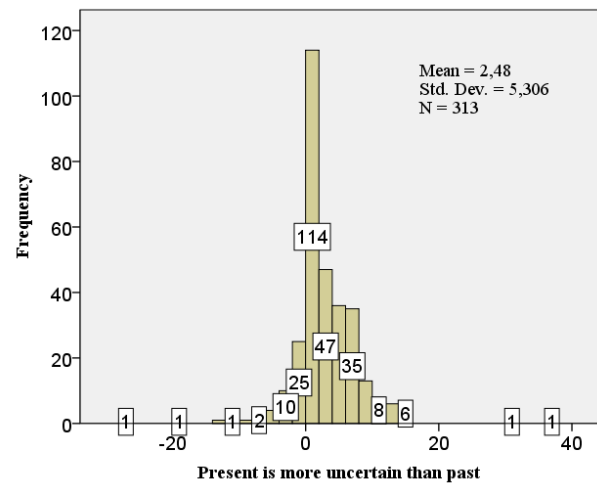
1996



1999



2004



2009



### 6.3 The strategies followed

Strategy	1996	1999	2004	2009
Withdrawal	9%	7%	9%	7%
Defending	16%	14%	12%	11%
Stability	34%	38%	33%	35%
Growth	30%	32%	30%	26%
Attacking	9%	8%	6%	6%
Focusing	0%	0%	7%	10%
Non-conscious strategy	2%	2%	2%	5%
	100%	100%	100%	100%

Strategy	1992	1993	1994	1995	1996	1997	1998	1999	2000
Withdrawal	18%	13%	11%	11%	7%	1%	4%	0%	18%
Defending	22%	19%	16%	14%	25%	7%	6%	9%	11%
Stability	28%	33%	32%	33%	44%	32%	30%	27%	35%
Growth	21%	24%	33%	32%	22%	48%	46%	9%	23%
Attacking	5%	8%	7%	8%	0%	11%	13%	55%	4%
Focusing	0%	0%	0%	0%	0%	0%	0%	0%	7%
Non-conscious strategy	5%	4%	2%	2%	2%	1%	1%	0%	2%
	100%	100%	100%	100%	100%	100%	100%	100%	100%

Strategy	2001	2002	2003	2004	2005	2006	2007	2008	2009
Withdrawal	5%	8%	10%	0%	6%	7%	5%	13%	24%
Defending	12%	16%	13%	0%	6%	9%	10%	16%	32%
Stability	42%	31%	23%	19%	23%	25%	38%	37%	16%
Growth	22%	35%	38%	31%	42%	45%	27%	13%	4%
Attacking	2%	4%	10%	25%	4%	9%	6%	6%	0%
Focusing	11%	5%	4%	25%	13%	5%	13%	13%	20%
Non-conscious strategy	5%	0%	1%	0%	6%	0%	2%	2%	4%
	100%	100%	100%	100%	100%	100%	100%	100%	100%

## 6.4 Corporate performance

### 6.4.1 Descriptive statistics

Variable	much worse	worse	same	better	much better	valid	modus	median
Cost efficiency	39	219	528	269	68	1123	3	3
Market share	100	262	397	264	79	1102	3	3
Technology level	59	183	495	301	76	1114	3	3
Product quality	4	65	468	434	122	1093	3	4
Range of product lines	23	134	501	301	122	1081	3	3
Competitive prices	20	154	505	345	82	1106	3	3
Delivery accuracy	7	60	483	408	127	1085	3	3
Customisation readiness	7	71	409	433	185	1105	4	4
Flexibility of production system	13	114	486	321	96	1030	3	3
Efficiency of logistics system	15	131	387	209	43	785	3	3
Short delivery deadlines	11	77	558	306	99	1051	3	3
Speed of adaptation to changing consumer needs	11	104	436	409	130	1090	3	3
Manufacturing quality	19	100	507	297	70	993	3	3
Strategic alliances with major partners	54	220	450	261	75	1060	3	3
Corporate image	35	178	424	324	124	1085	3	3
Organisation of distribution channels	28	174	584	195	46	1027	3	3
Creditability	64	178	414	286	148	1090	3	3
Level of receivables	44	185	516	260	76	1081	3	3
Solvency	39	144	461	314	134	1092	3	3
Consumer service level	16	94	561	325	77	1073	3	3
Lobby capacity	158	292	399	165	37	1051	3	3
Sales to state or publicly financed institutions	186	250	445	87	28	996	3	3
Ability to forecast market changes	26	210	541	250	47	1074	3	3
Export activity	145	180	369	205	94	993	3	3
Ethical behaviour	11	20	417	441	200	1089	4	4
Environmental (ecological) awareness	8	67	545	330	102	1052	3	3
Introduction of proper quality raw materials	13	53	561	301	82	1010	3	3
Reliable raw material suppliers	13	83	589	255	78	1018	3	3
Capacity utilisation	27	194	428	332	84	1065	3	3
Qualification of employees	8	98	533	376	87	1102	3	3
Application of innovative sales promotion methods	38	254	503	204	42	1041	3	3
Highly qualified, professional managers	6	75	529	392	97	1099	3	3
Up-to-date decision making/operation systems	18	181	518	306	53	1076	3	3
Level of R+D expenditures	101	266	462	153	43	1025	3	3
Launch of new products	52	209	466	255	59	1041	3	3
Efficiency of organisational structure	19	176	538	297	44	1074	3	3
Integrated enterprise information system	45	224	470	262	70	1071	3	3
Level of management information system	37	190	451	335	61	1074	3	3
Integration of business administration functions	15	130	623	252	30	1050	3	3
More direct relation to consumers	12	96	459	395	113	1075	3	3
Adequate stocks	10	126	574	267	59	1036	3	3
Profitability	72	251	454	256	58	1091	3	3

## 6.4.2 Test of normality before replacing missing values

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Cost efficiency	.257	585	,000	,879	585	,000
Market share	.201	585	,000	,912	585	,000
Technology level	.250	585	,000	,876	585	,000
Product quality	.257	585	,000	,836	585	,000
Range of product lines	.264	585	,000	,881	585	,000
Competitive prices	.276	585	,000	,865	585	,000
Delivery accuracy	.266	585	,000	,851	585	,000
Customisation readiness	.237	585	,000	,874	585	,000
Flexibility of production system	.238	585	,000	,883	585	,000
Efficiency of logistics system	.271	585	,000	,870	585	,000
Short delivery deadlines	.298	585	,000	,841	585	,000
Speed of adaptation to changing consumer needs	.218	585	,000	,884	585	,000
Manufacturing quality	.283	585	,000	,853	585	,000
Strategic alliances with major partners	.223	585	,000	,903	585	,000
Corporate image	.231	585	,000	,900	585	,000
Organisation of distribution channels	.300	585	,000	,840	585	,000
Creditability	.198	585	,000	,910	585	,000
Level of receivables	.261	585	,000	,879	585	,000
Solvency	.238	585	,000	,889	585	,000
Consumer service level	.304	585	,000	,833	585	,000
Lobby capacity	.221	585	,000	,902	585	,000
Sales to state or publicly financed institutions	.253	585	,000	,879	585	,000
Ability to forecast market changes	.258	585	,000	,872	585	,000
Export activity	.202	585	,000	,910	585	,000
Ethical behaviour	.242	585	,000	,837	585	,000
Environmental (ecological) awareness	.300	585	,000	,831	585	,000
Introduction of proper quality raw materials	.327	585	,000	,803	585	,000
Reliable raw material suppliers	.331	585	,000	,814	585	,000
Capacity utilisation	.224	585	,000	,894	585	,000
Qualification of employees	.283	585	,000	,852	585	,000
Application of innovative sales promotion methods	.255	585	,000	,880	585	,000
Highly qualified, professional managers	.275	585	,000	,849	585	,000
Up-to-date decision making/operation systems	.254	585	,000	,875	585	,000
Level of R+D expenditures	.249	585	,000	,894	585	,000
Launch of new products	.233	585	,000	,897	585	,000
Efficiency of organisational structure	.279	585	,000	,862	585	,000
Integrated enterprise information system	.250	585	,000	,892	585	,000
Level of management information system	.233	585	,000	,886	585	,000
Integration of business administration functions	.322	585	,000	,813	585	,000
More direct relation to consumers	.237	585	,000	,867	585	,000
Adequate stocks	.311	585	,000	,838	585	,000
Profitability	.226	585	,000	,900	585	,000

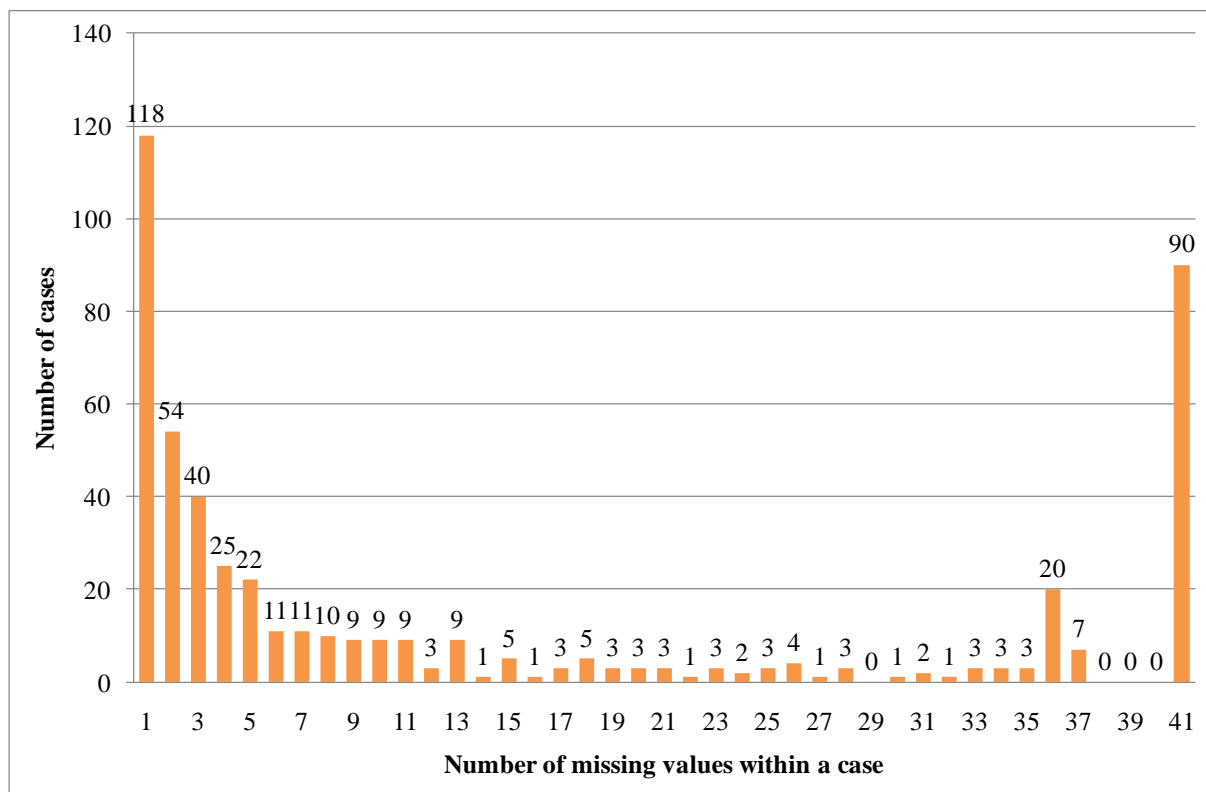
a. Lilliefors Significance Correction

### 6.4.3 Test of normality after replacing missing values

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Cost efficiency	.246	1009	,000	,889	1009	,000
Market share	.187	1009	,000	,915	1009	,000
Technology level	.228	1009	,000	,897	1009	,000
Product quality	.253	1009	,000	,855	1009	,000
Range of product lines	.260	1009	,000	,882	1009	,000
Competitive prices	.251	1009	,000	,881	1009	,000
Delivery accuracy	.257	1009	,000	,857	1009	,000
Customisation readiness	.226	1009	,000	,874	1009	,000
Flexibility of production system	.267	1009	,000	,871	1009	,000
Short delivery deadlines	.305	1009	,000	,840	1009	,000
Speed of adaptation to changing consumer needs	.227	1009	,000	,880	1009	,000
Manufacturing quality	.290	1009	,000	,852	1009	,000
Strategic alliances with major partners	.221	1009	,000	,904	1009	,000
Corporate image	.211	1009	,000	,904	1009	,000
Organisation of distribution channels	.299	1009	,000	,847	1009	,000
Creditability	.199	1009	,000	,910	1009	,000
Level of receivables	.246	1009	,000	,890	1009	,000
Solvency	.226	1009	,000	,898	1009	,000
Consumer service level	.291	1009	,000	,849	1009	,000
Lobby capacity	.212	1009	,000	,904	1009	,000
Sales to state or publicly financed institutions	.271	1009	,000	,868	1009	,000
Ability to forecast market changes	.262	1009	,000	,876	1009	,000
Export activity	.214	1009	,000	,908	1009	,000
Ethical behaviour	.229	1009	,000	,845	1009	,000
Environmental (ecological) awareness	.302	1009	,000	,839	1009	,000
Introduction of proper quality raw materials	.320	1009	,000	,817	1009	,000
Reliable raw material suppliers	.329	1009	,000	,820	1009	,000
Capacity utilisation	.217	1009	,000	,897	1009	,000
Qualification of employees	.269	1009	,000	,862	1009	,000
Application of innovative sales promotion methods	.255	1009	,000	,878	1009	,000
Highly qualified, professional managers	.277	1009	,000	,851	1009	,000
Up-to-date decision making/operation systems	.259	1009	,000	,873	1009	,000
Level of R+D expenditures	.245	1009	,000	,892	1009	,000
Launch of new products	.230	1009	,000	,896	1009	,000
Efficiency of organisational structure	.266	1009	,000	,868	1009	,000
Integrated enterprise information system	.232	1009	,000	,897	1009	,000
Level of management information system	.215	1009	,000	,891	1009	,000
Integration of business administration functions	.317	1009	,000	,821	1009	,000
More direct relation to consumers	.242	1009	,000	,875	1009	,000
Adequate stocks	.313	1009	,000	,838	1009	,000
Profitability	.215	1009	,000	,905	1009	,000

a. Lilliefors Significance Correction

#### 6.4.4 Histogram of missing values of corporate performance variables without the logistics variable



## 6.4.5 MDS running parameters

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MINSTRESS(.0001)
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/PLOT=STRESS.
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**Credit**

Proxscal
Version 1.0
by
Data Theory Scaling System Group (DTSS)
Faculty of Social and Behavioral Sciences
Leiden University, The Netherlands

**Case Processing Summary**

Cases	1009	
Sources	1	
Objects	1009	
Proximities	Total Proximities	508536 <sup>a</sup>
	Missing Proximities	0
	Active Proximities <sup>b</sup>	508536

a. Sum of all strictly lower-triangular proximities.

b. Active proximities include all non-missing proximities.

## 6.4.6 Stress and fit measures between 1 and 7 dimensions

**Stress and Fit Measures**

Dimensionality:1

Normalized Raw Stress	.14998
Stress-I	.38728 <sup>a</sup>
Stress-II	.56368 <sup>a</sup>
S-Stress	.26797 <sup>b</sup>
Dispersion Accounted For (D.A.F.)	.85002
Tucker's Coefficient of Congruence	.92196

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.176.

b. Optimal scaling factor = .946.

**Stress and Fit Measures**

Dimensionality:2

Normalized Raw Stress	.07762
Stress-I	.27860 <sup>a</sup>
Stress-II	.50707 <sup>a</sup>
S-Stress	.17525 <sup>b</sup>
Dispersion Accounted For (D.A.F.)	.92238
Tucker's Coefficient of Congruence	.96041

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.084.

b. Optimal scaling factor = .953.

### Stress and Fit Measures

Dimensionality:3

Normalized Raw Stress	.04983
Stress-I	.22323 <sup>a</sup>
Stress-II	.46998 <sup>a</sup>
S-Stress	.12610 <sup>b</sup>
Dispersion Accounted For (D.A.F.)	.95017
Tucker's Coefficient of Congruence	.97477

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.052.

b. Optimal scaling factor = .964.

### Stress and Fit Measures

Dimensionality:4

Normalized Raw Stress	.03444
Stress-I	.18557 <sup>a</sup>
Stress-II	.43200 <sup>a</sup>
S-Stress	.09338 <sup>b</sup>
Dispersion Accounted For (D.A.F.)	.96556
Tucker's Coefficient of Congruence	.98263

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.036.

b. Optimal scaling factor = .972.

### Stress and Fit Measures

Dimensionality:5

Normalized Raw Stress	.02584
Stress-I	.16076 <sup>a</sup>
Stress-II	.40418 <sup>a</sup>
S-Stress	.07419 <sup>b</sup>
Dispersion Accounted For (D.A.F.)	.97416
Tucker's Coefficient of Congruence	.98699

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.027.

b. Optimal scaling factor = .977.

### Stress and Fit Measures

Dimensionality:6

Normalized Raw Stress	.02105
Stress-I	.14510 <sup>a</sup>
Stress-II	.39103 <sup>a</sup>
S-Stress	.06346 <sup>b</sup>
Dispersion Accounted For (D.A.F.)	.97895
Tucker's Coefficient of Congruence	.98942

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.022.

b. Optimal scaling factor = .980.

### Stress and Fit Measures

Dimensionality:7

Normalized Raw Stress	.01549
Stress-I	.12445 <sup>a</sup>
Stress-II	.35083 <sup>a</sup>
S-Stress	.04536 <sup>b</sup>
Dispersion Accounted For (D.A.F.)	.98451
Tucker's Coefficient of Congruence	.99223

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.016.

b. Optimal scaling factor = .985.

#### 6.4.7 Correlation between corporate performance variables and dimensions

Spearman $\rho$		D1	D2	D3	D4	D5	D6	D7
Cost efficiency	Correlation Coefficient	.046	.352	.045	.080	-.179	-.020	.332
	Sig. (2-tailed)	.148	.000	.150	.011	.000	.532	.000
	N	1009	1009	1009	1009	1009	1009	1009
Market share	Correlation Coefficient	.417	-.015	.084	.100	-.004	.307	.198
	Sig. (2-tailed)	.000	.638	.008	.001	.900	.000	.000
	N	1009	1009	1009	1009	1009	1009	1009
Technology level	Correlation Coefficient	.307	.000	.009	.280	-.132	.232	.042
	Sig. (2-tailed)	.000	.998	.775	.000	.000	.000	.183
	N	1009	1009	1009	1009	1009	1009	1009
Product quality	Correlation Coefficient	.049	-.100	-.114	.227	.012	.131	-.013
	Sig. (2-tailed)	.121	.001	.000	.000	.702	.000	.686
	N	1009	1009	1009	1009	1009	1009	1009
Range of product lines	Correlation Coefficient	.129	-.188	.084	.136	.303	.225	.295
	Sig. (2-tailed)	.000	.000	.008	.000	.000	.000	.000
	N	1009	1009	1009	1009	1009	1009	1009
Competitive prices	Correlation Coefficient	-.179	.003	.140	-.023	-.077	-.151	.247
	Sig. (2-tailed)	.000	.930	.000	.467	.015	.000	.000
	N	1009	1009	1009	1009	1009	1009	1009
Delivery accuracy	Correlation Coefficient	-.245	.004	.128	-.038	-.172	.217	-.027
	Sig. (2-tailed)	.000	.890	.000	.225	.000	.000	.396
	N	1009	1009	1009	1009	1009	1009	1009
Customisation readiness	Correlation Coefficient	-.327	-.024	.216	-.040	-.215	.187	-.005
	Sig. (2-tailed)	.000	.438	.000	.204	.000	.000	.866
	N	1009	1009	1009	1009	1009	1009	1009
Flexibility of production system	Correlation Coefficient	-.176	.015	.163	-.047	-.273	.034	.075
	Sig. (2-tailed)	.000	.626	.000	.134	.000	.285	.017
	N	1009	1009	1009	1009	1009	1009	1009



Spearman $\rho$		D1	D2	D3	D4	D5	D6	D7
Short delivery deadlines	Correlation Coefficient	-.228	.014	.131	-.064	-.141	.088	.030
	Sig. (2-tailed)	.000	.648	.000	.043	.000	.005	.333
	N	1009	1009	1009	1009	1009	1009	1009
Speed of adaptation to changing consumer needs	Correlation Coefficient	-.209	-.005	.239	-.061	-.123	.135	.057
	Sig. (2-tailed)	.000	.876	.000	.051	.000	.000	.072
	N	1009	1009	1009	1009	1009	1009	1009
Manufacturing quality	Correlation Coefficient	.156	-.019	-.016	.172	-.064	.109	.015
	Sig. (2-tailed)	.000	.538	.616	.000	.044	.000	.640
	N	1009	1009	1009	1009	1009	1009	1009
Strategic alliances with major partners	Correlation Coefficient	.323	.024	.171	-.021	-.061	.292	.107
	Sig. (2-tailed)	.000	.438	.000	.514	.052	.000	.001
	N	1009	1009	1009	1009	1009	1009	1009
Corporate image	Correlation Coefficient	.348	.043	.115	.173	-.010	.457	.039
	Sig. (2-tailed)	.000	.171	.000	.000	.748	.000	.216
	N	1009	1009	1009	1009	1009	1009	1009
Organisation of distribution channels	Correlation Coefficient	.326	.139	.192	.096	-.019	.315	.193
	Sig. (2-tailed)	.000	.000	.000	.002	.544	.000	.000
	N	1009	1009	1009	1009	1009	1009	1009
Creditability	Correlation Coefficient	.283	.602	-.058	.134	.090	.214	.118
	Sig. (2-tailed)	.000	.000	.064	.000	.004	.000	.000
	N	1009	1009	1009	1009	1009	1009	1009
Level of receivables	Correlation Coefficient	.093	.526	-.262	.095	.076	.046	.045
	Sig. (2-tailed)	.003	.000	.000	.003	.016	.141	.157
	N	1009	1009	1009	1009	1009	1009	1009

Spearman $\rho$		D1	D2	D3	D4	D5	D6	D7
Solvency	Correlation Coefficient	.134	.623	-.132	.101	.093	.200	-.013
	Sig. (2-tailed)	.000	.000	.000	.001	.003	.000	.673
	N	1009	1009	1009	1009	1009	1009	1009
Consumer service level	Correlation Coefficient	.090	.046	-.003	.077	-.065	.231	-.115
	Sig. (2-tailed)	.004	.141	.934	.015	.039	.000	.000
	N	1009	1009	1009	1009	1009	1009	1009
Lobby capacity	Correlation Coefficient	.692	-.057	-.040	-.261	-.181	-.007	.043
	Sig. (2-tailed)	.000	.070	.206	.000	.000	.814	.177
	N	1009	1009	1009	1009	1009	1009	1009
Sales to state or publicly financed institutions	Correlation Coefficient	.699	-.107	-.076	-.366	.003	-.121	.003
	Sig. (2-tailed)	.000	.001	.016	.000	.914	.000	.914
	N	1009	1009	1009	1009	1009	1009	1009
Ability to forecast market changes	Correlation Coefficient	.379	.014	.116	.105	-.067	.182	.205
	Sig. (2-tailed)	.000	.646	.000	.001	.033	.000	.000
	N	1009	1009	1009	1009	1009	1009	1009
Export activity	Correlation Coefficient	.301	-.187	-.233	.617	-.212	-.052	.251
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.100	.000
	N	1009	1009	1009	1009	1009	1009	1009
Ethical behaviour	Correlation Coefficient	-.091	.047	.007	.189	.259	.166	-.183
	Sig. (2-tailed)	.004	.134	.833	.000	.000	.000	.000
	N	1009	1009	1009	1009	1009	1009	1009
Environmental (ecological) awareness	Correlation Coefficient	.116	-.039	.039	.176	.202	.070	-.168
	Sig. (2-tailed)	.000	.213	.211	.000	.000	.026	.000
	N	1009	1009	1009	1009	1009	1009	1009

Spearman $\rho$		D1	D2	D3	D4	D5	D6	D7
Introduction of proper quality raw materials	Correlation Coefficient	.056	-.100	-.002	.179	.119	.058	-.047
	Sig. (2-tailed)	.076	.001	.944	.000	.000	.066	.140
	N	1009	1009	1009	1009	1009	1009	1009
Reliable raw material suppliers	Correlation Coefficient	.096	.023	.015	.138	.120	.038	.052
	Sig. (2-tailed)	.002	.464	.629	.000	.000	.225	.097
	N	1009	1009	1009	1009	1009	1009	1009
Capacity utilisation	Correlation Coefficient	.059	.210	.136	.032	-.225	-.157	.297
	Sig. (2-tailed)	.062	.000	.000	.317	.000	.000	.000
	N	1009	1009	1009	1009	1009	1009	1009
Qualification of employees	Correlation Coefficient	.246	.075	.152	.207	-.104	.055	-.194
	Sig. (2-tailed)	.000	.017	.000	.000	.001	.083	.000
	N	1009	1009	1009	1009	1009	1009	1009
Application of innovative sales promotion methods	Correlation Coefficient	.342	.062	.362	.142	-.165	.171	.079
	Sig. (2-tailed)	.000	.047	.000	.000	.000	.000	.012
	N	1009	1009	1009	1009	1009	1009	1009
Highly qualified, professional managers	Correlation Coefficient	.245	.095	.256	.189	-.110	.144	-.220
	Sig. (2-tailed)	.000	.003	.000	.000	.000	.000	.000
	N	1009	1009	1009	1009	1009	1009	1009
Up-to-date decision making/operation systems	Correlation Coefficient	.279	.122	.418	.242	-.132	.051	-.134
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.109	.000
	N	1009	1009	1009	1009	1009	1009	1009
Level of R+D expenditures	Correlation Coefficient	.440	.107	.268	.117	.021	-.102	-.213
	Sig. (2-tailed)	.000	.001	.000	.000	.508	.001	.000
	N	1009	1009	1009	1009	1009	1009	1009

Spearman $\rho$		D1	D2	D3	D4	D5	D6	D7
Launch of new products	Correlation Coefficient	.302	-.082	.231	.079	.209	.090	.074
	Sig. (2-tailed)	.000	.010	.000	.012	.000	.004	.019
	N	1009	1009	1009	1009	1009	1009	1009
Efficiency of organisational structure	Correlation Coefficient	.189	.247	.378	.190	.015	-.088	.045
	Sig. (2-tailed)	.000	.000	.000	.000	.624	.005	.157
	N	1009	1009	1009	1009	1009	1009	1009
Integrated enterprise information system	Correlation Coefficient	.367	.210	.459	.273	.090	-.031	-.035
	Sig. (2-tailed)	.000	.000	.000	.000	.004	.330	.272
	N	1009	1009	1009	1009	1009	1009	1009
Level of management information system	Correlation Coefficient	.323	.225	.480	.272	.060	.008	.014
	Sig. (2-tailed)	.000	.000	.000	.000	.059	.798	.653
	N	1009	1009	1009	1009	1009	1009	1009
Integration of business administration functions	Correlation Coefficient	.272	.166	.308	.180	-.038	-.010	.040
	Sig. (2-tailed)	.000	.000	.000	.000	.233	.752	.200
	N	1009	1009	1009	1009	1009	1009	1009
More direct relation to consumers	Correlation Coefficient	-.134	-.020	.250	-.109	.077	.206	-.042
	Sig. (2-tailed)	.000	.525	.000	.001	.015	.000	.187
	N	1009	1009	1009	1009	1009	1009	1009
Adequate stocks	Correlation Coefficient	.023	.010	.088	.041	.123	.102	.011
	Sig. (2-tailed)	.461	.762	.005	.194	.000	.001	.732
	N	1009	1009	1009	1009	1009	1009	1009
Profitability	Correlation Coefficient	.235	.338	.122	.045	-.134	-.124	.342
	Sig. (2-tailed)	.000	.000	.000	.154	.000	.000	.000
	N	1009	1009	1009	1009	1009	1009	1009

#### 6.4.8 Stress and fit measures in 7 dimension in 1996, 1999, 2004, and 2009

**Stress and Fit Measures (1996)**

Normalized Raw Stress	.01240
Stress-I	.11134 <sup>a</sup>
Stress-II	.30650 <sup>a</sup>
S-Stress	.03558 <sup>b</sup>
Dispersion Accounted For (D.A.F.)	.98760
Tucker's Coefficient of Congruence	.99378

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.013.

b. Optimal scaling factor = .990.

**Stress and Fit Measures (2004)**

Normalized Raw Stress	.01327
Stress-I	.11520 <sup>a</sup>
Stress-II	.31801 <sup>a</sup>
S-Stress	.03616 <sup>b</sup>
Dispersion Accounted For (D.A.F.)	.98673
Tucker's Coefficient of Congruence	.99334

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.013.

b. Optimal scaling factor = .990.

**Stress and Fit Measures (1999)**

Normalized Raw Stress	.01433
Stress-I	.11971 <sup>a</sup>
Stress-II	.35943 <sup>a</sup>
S-Stress	.04384 <sup>b</sup>
Dispersion Accounted For (D.A.F.)	.98567
Tucker's Coefficient of Congruence	.99281

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.015.

b. Optimal scaling factor = .986.

**Stress and Fit Measures (2009)**

Normalized Raw Stress	.01379
Stress-I	.11744 <sup>a</sup>
Stress-II	.29469 <sup>a</sup>
S-Stress	.03600 <sup>b</sup>
Dispersion Accounted For (D.A.F.)	.98621
Tucker's Coefficient of Congruence	.99308

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.014.

b. Optimal scaling factor = .991.

#### 6.4.9 Correlated variables with performance dimensions, 2009

Dimension	Correlated variable*
<b>D1_2009</b>	market share strategic alliances with major partners corporate image organisation of distribution channels credibility level of receivables lobby capacity sales to state or publicly financed institutions ability to forecast market changes export activity launch of new products
<b>D2_2009</b>	customisation readiness flexibility of production system short delivery deadlines speed of adaptation to changing consumer needs export activity
<b>D3_2009</b>	technology level range of product lines corporate image application of innovative sales promotion methods up-to-date decision making/operation systems launch of new products
<b>D4_2009</b>	short delivery deadlines speed of adaptation to changing consumer needs strategic alliances with major partners corporate image organisation of distribution channels credibility
<b>D5_2009</b>	level of R+D expenditures
<b>D6_2009</b>	cost efficiency integrated enterprise information system level of management information system
<b>D7_2009</b>	-

\*Correlation significant at 99.9999% confidence level

#### 6.4.10 Correlated variables with performance dimensions, 2004

Dimension	Correlated variable*
<b>D1_2004</b>	cost efficiency, profitability market share technology level <b>customisation readiness (negative)</b> corporate image organisation of distribution channels creditability lobby capacity sales to state and publicly financed institutions ability to forecast market changes export activity application of innovative sales promotion methods up-to-date decision making/operation systems level of R+D expenditures launch of new products efficiency of organisational structure integrated enterprise information system level of management information system integration of business administration functions
<b>D2_2004</b>	cost efficiency creditability level of receivables solvency <b>sales to state or publicly financed institutions (negative)</b> efficiency of organisational structure integrated enterprise information system level of management information system profitability
<b>D3_2004</b>	product quality range of product lines <b>sales to state or publicly financed institutions (negative)</b> export activity
<b>D4_2004</b>	cost efficiency capacity utilisation <b>integrated enterprise information system (negative)</b>
<b>D5_2004</b>	delivery accuracy short delivery deadlines
<b>D6_2004</b>	market share strategic alliances with major partners corporate image organisation of distribution channels more direct relation to consumers
<b>D7_2004</b>	application of innovative sales promotion methods launch of new products more direct relation to consumers

\*Correlation significant at 99.9999% confidence level

#### 6.4.11 Correlated variables with performance dimensions, 1999

Dimension	Correlated variable*
D1_1999	market share technology level corporate image organisation of distribution channels creditability lobby capacity sales to state or publicly financed institutions ability to forecast market changes application of innovative sales promotion methods qualification of employees highly qualified, professional managers up-to-date decision making/operation systems level of R+D expenditures customisation readiness (negative) delivery accuracy (negative) customisation readiness (negative)
D2_1999	strategic alliances with major partners export activity (negative) integrated enterprise information system level of management information system integration of business administration functions
D3_1999	cost efficiency organisation of distribution channels creditability level of receivables solvency capacity utilisation efficiency of organisational structure profitability
D4_1999	competitive prices (negative) export activity up-to-date decision making/operation systems integrated enterprise information system
D5_1999	solvency ethical behaviour capacity utilisation (negative)
D6_1999	-
D7_1999	speed of adaptation to changing consumer needs ability to forecast market changes more direct relation to consumers

\*Correlation significant at 99.9999% confidence level



#### 6.4.12 Correlated variables with performance dimensions, 1996

Dimension	Correlated variable*
<b>D1_1996</b>	market share technology level <b>competitive prices (negative)</b> strategic alliances with major partners corporate image organisation of distribution channels creditability solvency lobby capacity sales to state or publicly financed institutions ability to forecast market changes application of innovative sales promotion methods up-to-date decision making/operation systems level of R+D expenditures integrated enterprise information system level of management information system profitability
<b>D2_1996</b>	cost efficiency creditability level of receivables solvency <b>sales to state or publicly financed institutions (negative)</b>
<b>D3_1996</b>	market share technology level product quality manufacturing quality <b>sales to state or publicly financed institutions (negative)</b> export activity
<b>D4_1996</b>	<b>sales to state or publicly financed institutions (negative)</b> up-to-date decision making/operation systems efficiency of organisational structure integrated enterprise information system integration of business administration functions
<b>D5_1996</b>	market share <b>customisation readiness (negative)</b> <b>short delivery deadlines (negative)</b> <b>introduction of proper quality raw materials (negative)</b>
<b>D6_1996</b>	range of product lines competitive prices
<b>D7_1996</b>	application of innovative sales promotion methods launch of new products more direct relation to consumers

\*Correlation significant at 99.9999% confidence level

#### 6.4.13 Correlation between the dimensions based on the total sample and the subsample of 1996

Spearman $\rho$ 1996		D1	D2	D3	D4	D5	D6	D7
D1_1996	Correlation Coefficient	,937	,240	-,067	,052	,054	-,001	-,063
	Sig. (2-tailed)	,000	,000	,299	,418	,400	,988	,332
	N	242	242	242	242	242	242	242
D2_1996	Correlation Coefficient	-,217	,775	-,351	,309	,119	,044	,301
	Sig. (2-tailed)	,001	,000	,000	,000	,065	,493	,000
	N	242	242	242	242	242	242	242
D3_1996	Correlation Coefficient	,033	-,393	-,089	,707	-,060	,134	,128
	Sig. (2-tailed)	,606	,000	,165	,000	,349	,038	,046
	N	242	242	242	242	242	242	242
D4_1996	Correlation Coefficient	,129	-,226	-,769	-,210	-,270	-,179	,086
	Sig. (2-tailed)	,045	,000	,000	,001	,000	,005	,184
	N	242	242	242	242	242	242	242
D5_1996	Correlation Coefficient	-,092	,063	,045	,022	-,247	-,020	-,026
	Sig. (2-tailed)	,156	,331	,485	,729	,000	,760	,691
	N	242	242	242	242	242	242	242
D6_1996	Correlation Coefficient	,161	-,091	,167	-,090	,243	-,292	,421
	Sig. (2-tailed)	,012	,157	,009	,161	,000	,000	,000
	N	242	242	242	242	242	242	242
D7_1996	Correlation Coefficient	,054	,047	,139	-,042	,033	,076	,120
	Sig. (2-tailed)	,407	,468	,031	,512	,605	,241	,063
	N	242	242	242	242	242	242	242

#### 6.4.14 Correlation between the dimensions based on the total sample and the subsample of 1999

Spearman $\rho$ 1999		D1	D2	D3	D4	D5	D6	D7
D1_1999	Correlation Coefficient	,937	-,042	-,034	,106	,064	,228	-,057
	Sig. (2-tailed)	,000	,514	,594	,096	,313	,000	,373
	N	247	247	247	247	247	247	247
D2_1999	Correlation Coefficient	-,156	-,187	-,585	,240	-,020	-,034	,255
	Sig. (2-tailed)	,014	,003	,000	,000	,756	,599	,000
	N	247	247	247	247	247	247	247
D3_1999	Correlation Coefficient	,008	,785	-,073	,347	-,072	,115	,310
	Sig. (2-tailed)	,906	,000	,254	,000	,260	,072	,000
	N	247	247	247	247	247	247	247
D4_1999	Correlation Coefficient	,052	,292	-,308	-,661	-,061	-,186	,130
	Sig. (2-tailed)	,413	,000	,000	,000	,340	,003	,040
	N	247	247	247	247	247	247	247
D5_1999	Correlation Coefficient	-,060	,097	-,256	-,173	,457	,645	-,230
	Sig. (2-tailed)	,351	,127	,000	,007	,000	,000	,000
	N	247	247	247	247	247	247	247
D6_1999	Correlation Coefficient	,111	-,099	-,124	,081	-,163	,040	-,003
	Sig. (2-tailed)	,081	,120	,052	,205	,010	,537	,967
	N	247	247	247	247	247	247	247
D7_1999	Correlation Coefficient	-,047	,031	-,020	,099	,087	-,153	-,158
	Sig. (2-tailed)	,462	,628	,751	,121	,174	,016	,013
	N	247	247	247	247	247	247	247

#### 6.4.15 Correlation between the dimensions based on the total sample and the subsample of 2004

Spearman $\rho$ 2004		D1	D2	D3	D4	D5	D6	D7
D1_2004	Correlation Coefficient	,932	,149	,217	,094	-,063	-,098	,148
	Sig. (2-tailed)	,000	,017	,001	,133	,316	,121	,018
	N	254	254	254	254	254	254	254
D2_2004	Correlation Coefficient	,222	-,891	-,304	-,109	,134	,054	,050
	Sig. (2-tailed)	,000	,000	,000	,083	,033	,389	,426
	N	254	254	254	254	254	254	254
D3_2004	Correlation Coefficient	,139	,122	,269	-,649	,046	-,041	-,351
	Sig. (2-tailed)	,027	,051	,000	,000	,465	,518	,000
	N	254	254	254	254	254	254	254
D4_2004	Correlation Coefficient	,127	,100	,191	,188	,480	,131	-,359
	Sig. (2-tailed)	,043	,110	,002	,003	,000	,037	,000
	N	254	254	254	254	254	254	254
D5_2004	Correlation Coefficient	,009	-,106	,069	,580	-,032	-,236	-,045
	Sig. (2-tailed)	,885	,093	,270	,000	,609	,000	,479
	N	254	254	254	254	254	254	254
D6_2004	Correlation Coefficient	-,064	-,090	,282	-,015	-,042	,712	,194
	Sig. (2-tailed)	,309	,151	,000	,811	,510	,000	,002
	N	254	254	254	254	254	254	254
D7_2004	Correlation Coefficient	,011	,010	-,319	-,113	-,299	-,163	-,083
	Sig. (2-tailed)	,856	,870	,000	,072	,000	,009	,188
	N	254	254	254	254	254	254	254

#### 6.4.16 Correlation between the dimensions based on the total sample and the subsample of 2009

Spearman $\rho$ 2009		D1	D2	D3	D4	D5	D6	D7
D1_2009	Correlation Coefficient	-,937	,005	,290	,036	,129	,042	-,281
	Sig. (2-tailed)	,000	,940	,000	,557	,036	,495	,000
	N	266	266	266	266	266	266	266
D2_2009	Correlation Coefficient	-,167	-,547	-,080	,028	-,323	-,037	,470
	Sig. (2-tailed)	,006	,000	,192	,650	,000	,549	,000
	N	266	266	266	266	266	266	266
D3_2009	Correlation Coefficient	,121	-,450	,434	,503	,085	,177	-,103
	Sig. (2-tailed)	,048	,000	,000	,000	,167	,004	,093
	N	266	266	266	266	266	266	266
D4_2009	Correlation Coefficient	-,013	-,201	-,333	,202	-,170	-,454	,002
	Sig. (2-tailed)	,836	,001	,000	,001	,005	,000	,980
	N	266	266	266	266	266	266	266
D5_2009	Correlation Coefficient	-,021	-,175	,043	-,251	-,031	-,008	,419
	Sig. (2-tailed)	,736	,004	,490	,000	,615	,900	,000
	N	266	266	266	266	266	266	266
D6_2009	Correlation Coefficient	-,034	-,303	-,207	-,228	,192	,098	-,150
	Sig. (2-tailed)	,576	,000	,001	,000	,002	,111	,014
	N	266	266	266	266	266	266	266
D7_2009	Correlation Coefficient	-,036	-,003	-,139	-,208	-,186	,181	-,167
	Sig. (2-tailed)	,559	,966	,024	,001	,002	,003	,006
	N	266	266	266	266	266	266	266

#### 6.4.17 Quintiles and other descriptors of the dimensions of corporate performance

	N		Median	Minimum	Maximum	Percentiles			
	Valid	Missing				20	40	60	80
<b>Market and lobby force</b>	1009	231	.057	-1.068	.982	-.261	-.025	.117	.249
<b>Financial force</b>	1009	231	.006	-1.083	1.000	-.205	-.046	.056	.213
<b>Organisational efficiency</b>	1009	231	.007	-.904	1.146	-.196	-.047	.053	.194
<b>Market orientation</b>	1009	231	-.006	-1.014	1.260	-.195	-.054	.047	.219
<b>Product orientation</b>	1009	231	-.002	-1.484	1.007	-.157	-.043	.042	.164
<b>Network position</b>	1009	231	.004	-1.579	.650	-.167	-.039	.053	.172
<b>Provisional competitive advantage</b>	1009	231	.006	-.766	1.634	-.165	-.043	.041	.170

## 6.5 Correlation between the perception of environmental uncertainty and firm performance

Spearman $\rho$		Market and lobby force	Financial force	Organisational efficiency	Market orientation	Product orientation	Network position	Provisional competitive advantage
Foreign sales market environment - past 3-4 years	Correlation Coefficient	-.024	-.124	-.123	.195	-.115	-.066	.153
	Sig. (2-tailed)	.452	.000	.000	.000	.000	.039	.000
	N	969	969	969	969	969	969	969
Foreign sales market environment - present	Correlation Coefficient	-.073	-.100	-.092	.224	-.123	-.066	.089
	Sig. (2-tailed)	.023	.002	.004	.000	.000	.039	.006
	N	975	975	975	975	975	975	975
Domestic sales market environment - past 3-4 years	Correlation Coefficient	-.059	-.051	.038	-.081	.091	.056	-.016
	Sig. (2-tailed)	.066	.107	.235	.011	.004	.078	.606
	N	983	983	983	983	983	983	983
Domestic sales market environment - present	Correlation Coefficient	-.051	-.039	.101	-.090	.111	.044	-.109
	Sig. (2-tailed)	.107	.216	.001	.005	.000	.170	.001
	N	990	990	990	990	990	990	990
Capital and financial market changes - past 3-4 years	Correlation Coefficient	-.067	-.086	.028	.050	-.008	-.040	.070
	Sig. (2-tailed)	.037	.007	.387	.118	.808	.217	.029
	N	977	977	977	977	977	977	977
Capital and financial market changes - present	Correlation Coefficient	-.076	-.125	.075	.070	-.013	-.020	-.050
	Sig. (2-tailed)	.018	.000	.019	.029	.675	.526	.120
	N	980	980	980	980	980	980	980
Foreign suppliers - past 3-4 years	Correlation Coefficient	.049	-.079	-.003	.113	-.053	-.042	.057
	Sig. (2-tailed)	.124	.014	.915	.000	.101	.196	.079
	N	968	968	968	968	968	968	968
Foreign suppliers - present	Correlation Coefficient	.031	-.061	.057	.084	-.019	-.037	.036
	Sig. (2-tailed)	.329	.058	.075	.009	.547	.246	.265
	N	971	971	971	971	971	971	971
Domestic suppliers - past 3-4 years	Correlation Coefficient	-.026	-.005	.071	-.024	.009	.037	.011
	Sig. (2-tailed)	.423	.870	.027	.452	.789	.243	.723
	N	980	980	980	980	980	980	980

Spearman $\rho$		Market and lobby force	Financial force	Organisational efficiency	Market orientation	Product orientation	Network position	Provisional competitive advantage
Domestic suppliers - present	Correlation Coefficient	-.025	-.023	.122	-.033	.073	.030	-.032
	Sig. (2-tailed)	.440	.465	.000	.296	.022	.353	.309
	N	986	986	986	986	986	986	986
Technological development - past 3-4 years	Correlation Coefficient	-.007	-.062	.040	-.008	.031	-.006	-.014
	Sig. (2-tailed)	.816	.054	.215	.808	.332	.853	.670
	N	975	975	975	975	975	975	975
Technological development - present	Correlation Coefficient	-.016	-.042	.017	-.012	.036	-.051	-.019
	Sig. (2-tailed)	.611	.190	.600	.696	.256	.113	.552
	N	979	979	979	979	979	979	979
Legislation - past 3-4 years	Correlation Coefficient	.075	.026	.024	-.047	.016	.036	-.031
	Sig. (2-tailed)	.018	.409	.444	.141	.623	.261	.338
	N	983	983	983	983	983	983	983
Legislation - present	Correlation Coefficient	.038	.030	.059	-.054	.001	.025	-.053
	Sig. (2-tailed)	.233	.353	.063	.091	.975	.440	.095
	N	987	987	987	987	987	987	987
Social changes - past 3-4 years	Correlation Coefficient	.056	-.025	.063	-.073	.058	-.011	-.052
	Sig. (2-tailed)	.080	.435	.049	.021	.068	.732	.106
	N	981	981	981	981	981	981	981
Social changes - present	Correlation Coefficient	.030	.019	.119	-.075	.063	-.002	-.112
	Sig. (2-tailed)	.344	.542	.000	.019	.047	.950	.000
	N	983	983	983	983	983	983	983
Domestic political changes - past 3-4 years	Correlation Coefficient	.070	-.014	.032	-.091	-.010	-.049	-.043
	Sig. (2-tailed)	.029	.660	.312	.004	.746	.122	.175
	N	980	980	980	980	980	980	980
Domestic political changes - present	Correlation Coefficient	.038	.002	.104	-.088	.011	-.071	-.084
	Sig. (2-tailed)	.232	.961	.001	.006	.734	.026	.008
	N	984	984	984	984	984	984	984
The present is more uncertain than the past	Correlation Coefficient	-.053	.017	.101	.023	.029	.006	-.127
	Sig. (2-tailed)	.092	.594	.001	.471	.357	.838	.000
	N	1009	1009	1009	1009	1009	1009	1009

Highlights: Yellow means significant correlations at 99.9% while red at 99% confidence level



2005-2008

2003-2005

1999-2003

2010-

2007-

2006-2008

2005-

2005-

2004-2005

2004

2009 May  
2007 February

2006 June

2006 April

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### PERSONAL DETAILS

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### EDUCATION

Full time Ph.D. Student

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- *Specialization: Corporate Strategy*
- *Comprehensive Exam: January 2008 (Summa Cum Laude)*
- *Defence of the Thesis Proposal: June 2010*

Master of Science in Business Administration (honours degree)

Széchenyi István University, Győr

- *Major in Finance and Insurance*

Bachelor of Science in Business Administration

Budapest Business School

- *Major in International Business and Economics*
- *Major in European Studies*

### LANGUAGES

Advanced Business English, Intermediate Business German

### RESEARCH INTEREST

Strategic Adaptation, Growth of the Firm, Entrepreneurship, Networks, Change management

### RESEARCH ACTIVITY

TÁMOP-4.2.1.B- 09/1/KMR-2010-0005 'The knowledge-based economy in Hungary, the conditions of the growing innovative approach and the increase of R&D performance' (4. sub-project research) 'Innovation of the SME sector' working group, research coordinator, CUB

'Effective business strategies in different corporate life cycles', OTKA thematic research, research fellow, CUB

'Regional role and innovation activity of Hungarian centred and governed enterprises in order to increase competitiveness', OTKA thematic research, researcher, CUB

Research Centre of Strategic and International Management, research fellow, CUB

Member of the Corvinus' Competitiveness Research Center's research project called "Competing with the World", CUB

'Corporate learning and strategy formulation at SMEs', research fellow, SZE

'Influencing factors in entrepreneurial activity and growth', research fellow, SZE, PTE

### SEMINARS ABROAD

25<sup>th</sup> Price-Babson SEE, Babson College, MA, USA

'Intensive Doctoral Seminar in Entrepreneurship' CEMS PhD course, Université Catholique de Louvain, Belgium

Organizational Learning, Networks, and Communities: Innovations in the emerging strategic entrepreneurship field, EUDOKMA seminar, Vrije University, Amsterdam, Holland

Qualitative Data Analysis in Business and Management Research, EUDOKMA seminar, Kingston University, UK

	<b>MAJOR CONTESTS</b>
2005	27th National Scientific Student Conference Integration, Globalization, World Economy track: Sopron, Hungary – <i>second prize award</i> Strategic Management track: Sopron, Hungary – <i>third prize award</i>
2004	5th MTA-VEAB Regional Scientific Student Conference Management track: Győr, Hungary – <i>first prize award</i> European Union track: Győr, Hungary – <i>first prize award</i>
	<b>SCHOLARSHIPS</b>
2005-2008	Full-time PhD scholarship
2001-2002, 2004-2005	Scholarship of the Hungarian Republic
2004	Graboplast Co. internship and grant (3 months)
	<b>PARTICIPATION IN EXCHANGE PROGRAM</b>
2002/2003	Erasmus Scholarship: Hochschule Mittweida, Germany (5 months)
	<b>ORGANISATION OF SCIENTIFIC CONFERENCES</b>
2009	23th RENT Conference, organiser
2006-	Scientific Student Conference, CUB, track chair <ul style="list-style-type: none"> <li>▪ Strategic management track</li> <li>▪ General management and Managerial accounting track</li> </ul>
	<b>MEMBERSHIP IN INTERNATIONAL SCIENTIFIC COMMUNITIES</b>
2009-	EIASM
2008-	European Group for Organizational Studies
2006-	Strategic Management Society
2006-	European Academy of Management
2006-	EDAMBA and EUDOKMA