CORE
Metadata, citation and similar papers at core.ac.uk
Provided by Research Papers in Economics

SCALES-paper N200214

Organisational structure and performance in Dutch SMEs

Joris Meijaard

Maryse J. Brand

Marco Mosselman

Zoetermeer, June 2002

EIM Business & Policy Research

SCALES SCientific Analysis of Entrepreneurship and SMEs

The SCALES-paper series is an electronic working paper series of EIM Business and Policy Research. The SCALES-initiative (Scientific Analysis of Entrepreneurship and SMEs) is part of the 'SMEs and Entrepreneurship' programme, financed by the Netherlands' Ministry of Economic Affairs. Complete information on this programme can be found at www.eim.nl/smes-and-entrepreneurship

The papers in the SCALES-series report on ongoing research at EIM. The information in the papers may be (1) background material to regular EIM Research Reports, (2) papers presented at international academic conferences, (3) submissions under review at academic journals. The papers are directed at a research-oriented audience and intended to share knowledge and promote discussion on topics in the academic fields of small business economics and entrepreneurship research.

address:	Italiëlaan 33
mail address:	P.O. Box 7001
	2701 AA Zoetermeer
telephone:	+ 31 79 341 36 34
telefax:	+ 31 79 341 50 24
website:	www.eim.nl

The responsibility for the contents of this report lies with EIM. Quoting numbers or text in papers, essays and books is permitted only when the source is clearly mentioned. No part of this publication may be copied and/or published in any form or by any means, or stored in a retrieval system, without the prior written permission of EIM.
EIM does not accept responsibility for printing errors and/or other imperfections.

ABSTRACT

The relationship between organisational structure and performance has received little attention over the past few decades, especially in regards to firms with less than 100 employees. All too often, the stereotype of SMEs as unstructured, informal 'adhocracies' is heard. Based on the study of a stratified sample of more than 1400 Dutch SMEs (in three size classes and nine economic sectors) we show that this stereotype is false. We derive a set of typical organisational structures. We further investigate the circumstances under which these structures seem to perform well, and, the circumstances under which they appear to perform poorly.

INTRODUCTION

One of the most elementary decisions a small firm owner or manager has to make is the design of the firm's organisation. As soon as a small firm hires one or more employees, some kind of organisational structure develops. The actual design of this organisational structure is a mix between intended, deliberate choices and unconscious, emergent developments. Who decides on what, who is responsible for what, and how do we coordinate these decisions and responsibilities effectively? Acknowledging an ongoing debate on the interrelationships between strategy, structure and performance, the outcome of the organisational design process is unmistakably an important determinant of the performance of firms.

Theoretical support of the importance can be found almost anywhere. Engineers, economists and sociologists have written on organisational structure and design (cf. literature reviews in major textbooks such as Mintzberg 1979, Robbins 1990, Burton and Obel 1998). Likewise, Williamson (1975) points at the diseconomies caused by unbalances between firm size, organisational form and external relationships. Organisational structure is also highlighted as a relevant factor in the regulation of a firm's information processing demands and capabilities (Burton and Obel 1998). Looking at the literature on small firms, we find additional support for the importance of organisational structure. Research on start-ups (e.g. Miller and Friesen 1980) indicates that developing and implementing an adequate structure is one of the most important challenges. Entrepreneurs struggle with it, and wrong choices may lead to exits.

Theory on organisational structure and design has developed, from a normative, universalistic approach (promoting 'the best structural form') via a normative contingency theory approach ('the best structural form given a specific set of conditions') to a notion of equifinity (Doty, Glick and Hubert 1993; 'in a specific situation, multiple good solutions exist'). Unfortunately, the empirical relevance and rigor of these normative theories are not always clear. Intuitively, we agree with Donaldson (1987) when he states that a good fit means better performance. But what exactly is a good fit? Studies that actually investigate performance in relation to organisational structures are rare (e.g. Covin and Slevin 1988) and/or do not find clear

relations between contingency factors, structure variables and performance (e.g. Child 1976). The majority of studies are of a descriptive and predictive nature (e.g. Child 1972, Pugh and Hickson 1976) or focusing on one aspect of structure (e.g. Axley 1992) leading to a confusing mix of 'hypotheses', 'recommendations' and 'decision rules'. Burton and Obel (1998) collected about 450 such rules for organisational design and put them into "The Organisational Consultant" knowledge base. This could give the impression that the organisational structure problem is a done deal: put in your characteristics and your preferred structure is clear. However, for many of the rules it is unclear how they were derived: by rule of thumb, logical deduction or sound empirical research? Moreover, most rules are based on the study of large firms only.

In this study, we want to re-open the discussion. We search for insight in the role of organisational structure, which we expect to be critical in the performance of small and medium-sized enterprises (SMEs). The well-known and (relatively) large-scale empirical studies are over 20 years old. Since then, technological developments have changed the shape, efficiencies and structure of organisations. Theory has been developing accordingly, but empirical insights have lagged. Variations in the organisational structures of small and medium-sized firms are often not acknowledged.

Many studies agree that organisational size is one of the variables most closely related to organisational structure (e.g. Pugh and Hickson 1976), but the number of studies that actually focus on, or even include, SMEs are scarce (e.g. Geeraerts 1984, Chaston 1997, Caruana et al 1998, Johnston 2000). The studies that do investigate organisational structures in SMEs mostly have a limited empirical base (48 to 249 cases), pay attention to only a few aspects of organisational structure, and do not look into differences between size classes.

As a first step in the right direction, this study presents a quantitative study into the occurrence of various structures in small firms. We aim to gain insight in the occurrence of typical organisational structures, the role of contingency factors, and the impact of small and medium-sized firms' structures on performance.

DIMENSIONS OF ORGANISATIONAL STRUCTURE

Over the last decades a vast literature on organisational structure has been developing using a variety of variables to measure the concept. In this section we briefly review a number of well-cited authors who have attempted to find a coherent set of such variables.

We see organisational structure as consisting of two main dimensions: (1) *work division*, distributing tasks and activities, and (2) *coordination mechanisms*, including standardisation and formalisation. Based on these two dimensions, typically a number of specific structure variables can be developed. At this point we do not go into the operationalisation of the variables. They will be discussed below.

INSERT TABLE 1 HERE

As Table 1 illustrates, various authors use somewhat different structure variables. The earlier studies use specialisation to describe how tasks are distributed among firm members. Geeraerts (1984) later distinguishes specialisation and differentiation (also referred to as departmentalisation). More recent authors put forward that the types of impact that specialisation and differentiation have on an organisation are very similar. They both contribute to the complexity of the structure. As regards to the importance of the locus of authority of decisions ('centralisation') and the relevance of codes and procedures ('formalisation') most authors agree. A final feature mentioned by several authors describes the way firms organise day-to-day coordination ('standardisation') between individuals and departments. Mintzberg (1979) distinguishes three main types of coordination: direct control, mutual adjustment and standardisation.

Grouping along the two dimensions (work division and coordination mechanisms), complexity and decentralisation are about how specific tasks (either activities or decision-making tasks) are distributed in the organisation, i.e. *the work division*. Formalisation, standardisation and coordination are about controlling and optimizing organisational procedures i.e. *the coordination mechanisms.*

CONTINGENCIES

In this section we discuss contingencies on the relationship between organisational structure and performance. Extended reviews of earlier research on this can be found (again) in e.g. Mintzberg (1979), Robbins (1990) and Burton and Obel (1998).

Environment

The uncertainty and complexity of the firm's *environment* determines the appropriateness of organisational structures. Other environmental aspects mentioned are e.g. hostility. equivocality and unpredictability (cf. Lawrence and Lorsch 1967, Child 1972, Miller and Friesen 1980). A landmark contribution comes from Burns and Stalker (1961). The latter argue that an organisation should be mechanistic in a stable environment and organic when the environment is turbulent. Discussing correlations, Robbins (1990) suggests that formalisation and environmental uncertainty are inversely related, environmental complexity and decentralisation are positively related, and that hostility in the environment leads to centralisation.

Technology

Technology can be defined as the information, equipment, techniques, and processes required to transform inputs to outputs (Robbins 1990, Burton and Obel 1998). When measuring technology and linking it to organisational structure the main dimensions may be the unit, mass and process typology (Woodward 1965) or routine versus non-routine (Perrow 1970). A commonly used proxy is the sector (manufacturing, services, etc). Discussing correlations, Robbins (1990) suggests that routine technology is positively related to low complexity and high formalisation, while it is only positively related to centralisation if formalisation is low. A recent metastudy by Hirst (2001) however finds much variation to be spurious.

Size

Size is quite directly related to structure. As organisations grow, both the opportunity and need for work division and coordination rise. Pugh and Hickson (1976) empirically substantiate this finding, and also e.g. Blau and Schoenherr (1971), Child and Mansfield (1972) and Miller and Toulouse (1986) support the position. Robbins (1990) summarises that complexity and formalisation are positively related to size,

while research on centralisation yields mixed findings (almost exclusively based on large organisations). Small firms have different agendas, but also a limited set of structural options. Geeraerts (1984) found positive correlations between size and complexity, formalisation and decentralisation.

Strategy

Chandler (1962) started the mainstream discussion on the relationship between structure and strategy, based on a study in nearly one hundred large firms. He found that 'structure follows strategy'. Miles and Snow (1978) developed this idea into a typology indicating best fits between structure and strategy. Later, the environment and technology in which firms operate were introduced as important factors determining strategy and, hence, structure. The present opinion is that structure and strategy are interrelated, and causality is hard to show. Obviously, this is partly due to firms' sluggish, inert reactions to their environments and their possible natural resistance to change (Miller and Friesen 1980).

Owner/manager objectives

Many studies show a relationship between structure and managerial variables such as entrepreneurship, leadership style, and type of control (e.g. Mintzberg 1979, Robbins 1990, Miller and Friezen 1980, Geeraerts 1984, Chaston 1997, Johnston 2000). Burton and Obel (1998) summarise these variables into a high/low management preference for micro-involvement. High involvement is compatible with low complexity, high formalisation and high centralisation. Geeraerts (1984) finds that relationships between the sizes of organizations and their structure are modified by the status of the management of the firm.

Although we presented the above contingencies seperately, it is obvious that many interrelations may exist. For example, in small businesses the organization is more likely to be structured in accordance with the owners' or managers' preferred problem-solving strategies than in large corporations (Miller and Toulouse 1986). Various authors have developed this idea and proposed configurations, or typologies of organisational structures.

CONFIGURATIONS

Miller (1980a) has argued that multivariate interdependencies in structure variables tend to manifest in Gestalts. Common configurations of mutually reinforcing elements occur. This idea is not new. Max Weber already introduced the Gestalt 'machine-bureaucracy' proposing that specialisation, rules and procedures, paperwork, and an extended hierarchy are positively related, and that all these structuring variables are negatively related to the centralisation of decision making. Other famous examples are the typology of Burns and Stalker (1961) who distinguish between organic and mechanistic organisations; Pugh and Hickson (1976) propose a sevenfold classification of broad types of organisational structures; and Mintzberg (1979) who introduces five structural configurations ranging from a 'simple structure' to a 'divisionalised form'. Sometimes these configurations are interpreted as ideal types (e.g. Mintzberg 1979), sometimes as observed types (Pugh and Hickson 1976). Miller and Friesen (1980) demonstrate that changes (or stability) in the structure variables tend to occur together, or follow one another after a very brief interval (in order to maintain an appropriate balance or 'configuration').

An important limitation of many of these typologies is that they are based on case studies or surveys in large firms. The small firm is often positioned as a caricature in one of the types, such as Burns and Stalker's '*organic organisation*' or Mintzberg's '*simple structure*'.

To conclude this section we stress that much research on organisational structures has been done, largely in the 1960s, 1970s and 1980s. Organisational size is one of the important variables related to organisational structure, but really small firms, especially less than one hundred employees, are rarely included in empirical studies, let alone focused on. We will do just that.

In the next section we will describe the research design of our survey. We build upon the two dimensions of organisational structure (work division and coordination) and the five important contingency variables as described above. Additionally, we will take up the idea that probably configurations of structure variables exist and look for the existence of such a typology for small firms.

RESEARCH METHOD

Three times a year, about 1,800 entrepreneurs of Dutch small and medium sized companies participate in EIM's SME Policy Panel. The panel is used for stand-alone and longitudinal research. The purpose of the panel is to gather information about the attitudes, behaviour and performance of Dutch SMEs with fewer than 100 employees. The panel is stratified in three size-classes and nine economic sectors[1]. For each of the enterprises in the panel several control variables are available, among others size, strategy, type of economic activity and location.

For this research, a questionnaire was designed based on the theories on organisational structure outlined above. We have used 20 three-point Likert-type questions, 6 yes or no questions and several more open questions. We chose to use three point Likert scales, since in test interviews this has repeatedly been found to be the maximum complexity that the interviewees can handle over the telephone, unless one asks questions in two steps. For our 6 performance variables the latter two-step questioning has been used.

For this investigation, we have a sample of 1411 Dutch SMEs employing at least one person (to have at least some 'organisational structure'). Like said, the firms were drawn from the population of Dutch SMEs based on 27 strata by sector and size class.

RESEARCH DESIGN

Our research consists of four steps. Firstly, a factor analysis is performed on the various items in the survey. Based on these factors, we highlight several of the key features of the organisational structures of SMEs. Then, we move on to derive types of SMEs based on their organisational structures by way of a cluster analysis, and, we discuss how the clusters are distributed across the economic sectors. Finally, we show whether there are any systematic consequences of being a particular type of firm. Relatively poor and good performance are analysed given size, sector and strategy.

[1] The size classes are: 0 through 9 employees, 10 through 49 employees and 50 through 99 employees. The sectors are: Manufacturing, Construction, Trade & repair, Meals & food services, Transport, Business services, Financial services, Personal services and Non-private (includes healthcare, farming).

VARIABLES IN THE ANALYSIS

We include variables in six broad categories. Next to a number of control and performance variables, we measured twenty-three items on organisational structure. Seven items are on departmentalisation, four on specialisation, four on decentralisation and eight on coordination.

INSERT TABLE 2 HERE

RESULTS

The twenty-three items on organisational structure (division of work and coordination) listed above amount to nine factors capturing the critical variations in organisational structure in SMEs. Table 2 below shows the contributing coefficients larger than 0.40 in absolute value.

The resulting factors are largely as expected: departmentalisation splits into a component of hierarchical complexity and a component of divisional complexity. Specialisation splits into task diversity and employee specialisation components. Decentralisation has components for operational and strategic influence respectively. Coordination is the most special case. Formalisation and standardisation largely correspond (factor 9). Direct coordination by the entrepreneur contributes to the hierarchical complexity. Informal team coordination is responsible for a separate component, together with job rotation (employees fulfilling multiple jobs). Self-coordination is the only significant contributor to factor 8. Interesting enough, apparently, both informal team-coordination ('multifunctional teams') and self-coordination ('autonomy') are rather independent from the other organisational structure items. Furthermore, they vary substantially across SMEs (otherwise they wouldn't qualify as 'independent' factors).

INSERT TABLE 3 HERE

Based on the contributions to the components above, we construct scales for nine dimensions of organisational structure. For the eight constructs with more than two items Crohnbach's α is reasonable (>0.65). The scales are direct sums of the (significantly) contributing items, weighted for the scales.

Further analysis of the constructs teaches us that the myth "SMEs are informal, unstructured and centralised" (and therefore lean and mean) appears to be untrue. The larger firms in our sample (50-99 employees) are more standardised, but considerable variation exists, also among the smaller firms. The departmentalisation of larger SMEs is more complex, but quite a few of the firms with less than fifty employees are pretty complex in their structure as well. Task diversity decreases and employee specialisation increases as SMEs are larger, but - once again – a whole range of smaller SMEs show more specialisation than larger ones (note the standard deviations). For operational decisions, larger SMEs are a bit more decentralised than smaller ones. For strategic decisions there is *not* a systematic difference between medium-sized and small. Finally, team coordination and self-coordination do not show any systematic differences based on size class.

INSERT TABLE 4 HERE

Given the variations of the nine constructs per size class (and also per size class × sector (see XXXXX et al. (2002)), we are interested to learn whether systematic organisation types can be delineated. Testing for the optimal number of clusters by way of the sum of squared distances to the cluster centres[2], we arrive at nine typical organisation structures (next to the possible tenth of having no employees). First, we show the nine typical structures. Then, we see whether the organisational structure has systematic consequences in terms of performance, given the control variables.

INSERT TABLE 5 HERE

[2] There is a 'kink' in the SSD-plot from introduction of the eighth to the ninth cluster. The sums of squared distances were plotted for two to twenty clusters.

For these typical organisational structures, we have tested the performance given the control variables. If structure does not match strategy, size or sector, one would expect a lower performance. Below, we present the results in two tables. We show by typical organisational structure which objectives, size classes, strategies and sectors perform relatively well, and, which perform relatively poorly.

It is interesting to note from Table 6 that the various structures occur across sectors, strategies, objectives and sizes. It is clear that some structures fit particular circumstances very well. A lean, focused multifunctional team performs rather well in manufacturing, construction businesses, as well as in hotels and catering services and 'non-private' (subsidised) activities. A focus strategy, directed towards a particular supplier or customer appears to work well for this type of small firms. Contrarily, complex multi-unit firms that explicitly do *not* have a focus strategy also perform better. It is interesting to note that even the smaller firms can choose a complex multi-unit structure. A focused hierarchy structure may work well with a growth objective and an (albeit weak) low-cost strategy, especially in construction and transport businesses. The operational autonomy structure seems to work well with a growth objective and a weak differentiation strategy and explicitly *not* a focus strategy, especially in rental en financial services.

INSERT TABLE 6 HERE

On the other hand, some structures are less suitable for particular control conditions. The focused multifunictional team does not fit an independence objective. The results indicate that the firms that combine these do not perform as well as the other firms. This also holds for operational autonomy structures in manufacturing and construction. The organisational structure does not appear to fit the circumstances.

Entrepreneur-centred firms do not reach high performance in a range of circumstances. Those that explicitly aim at continuity perform relatively well, especially tightly controlled firms in the trade and repair business (Table 5). The firms without employees perform reasonable if applying differentiation strategies (although across the board performance of solo entrepreneurs is not very impressive). Especially

the soloists that do not choose a specific strategy perform poorly, especially the ones in transport, rental and financial services.

Coordinated 'complex' hierarchies that aim for a growth objective perform poorly, especially in trade and repair businesses. Strikingly, autonomous team structures with a growth objective or a low-cost strategy appear to perform comparatively poor.

INSERT TABLE 7 HERE

CONCLUSIONS

All in all, it is quite clear that the relationship between organisational structure and business performance is complex. Small and medium sized firms are a very heterogeneous bunch, both across sectors and across size classes. Strategies and objectives provide some insight in the operational fit of particular structures, but more thorough analysis is desired. Other features of the context, such as the number of customers, the number of competitors, the number of suppliers and so forth seem very relevant interacting variables. Analysis of all control variables and organisational structure at the same time provides an econometric challenge.

The present study above nonetheless provides a substantial step towards a better understanding of SMEs and their operational performance. Additional research comparing these results to other countries is very interesting. Nonetheless there is no reason to assume that the Dutch conditions are radically different from other countries such that these results are not largely transferable.

REFERENCES

Ayers, D.J. (2001), Integration and new product development success: the role of formal and informal controls, *The Journal of Applied Business Research*, vol. 17, no. 2, p. 133-148.

Burns, T. and G.M. Stalker (1961), *Management of Innovation*, London, Tavistock.

Burton, R.M. and B. Obel (1998), *Strategic organizational diagnosis and design*, 2nd edition, Boston, Kluwer Academic Publishers.

Caruana, A, M.H. Morris and M.J. Vella (1998), The effect of centralization and formalization on entrepreneurship in export firms, *Journal of Small Business Management*, vol. 36, 1, p. 16-29.

Chandler, A.D. (1962), *Strategy and Structure: Chapters in the History of the Industrial Enterprise*, Cambridge: MIT Press.

Chaston, I. (1997), Small firm performance: assessing the interaction between entrepreneurial style and organizational structure, *European Journal of Marketing*, vol. 31, no. 11/12, p. 814-....

Child, J. (1972), Organizational Structure and stategies of control: replication of the Aston study, *Administrative Science Quartely*, p. 163-177.

Child, J. (1976), Managerial and organizational factors associated with company performance, in: Pugh, D.S. and C.R. Hinings, *Organizational Structure; Extensions and Replications*, Farnborough, Hants, Saxon House.

Dewar, R.D., D.A. Whetten and D. Boje (1980), An examination of the reliability and validity of the Aiken and Hage Scales of centralization, formalization, and task routineness, *Administrative Science Quarlerly*, vol. 25, March, p. 120-128.

Donaldson, L. (1987), Strategy and structural adjustment to regain fit and performance:: in defence of contingency theory, Journal of Management studies, 24(1), 1-24.

Geeraerts, G (1984), The effect of ownership on the organisation structure in small firms, *Administrative Science Quarterly*, p. 232-237.

Hirst, G. (2000), Context as a spurious concept., *Proceedings, Conference on Intelligent Text Processing and Computational Linguistics*, Mexico City, February 2000, 273-287

Johnston, M.A. (2000), Delegation and organizational structure in small businesses, *Group & Organization Management*, Vol. 25, No. 1, March, p. 4-21.

Lawrence, P.R. and J.W. Lorsch (1967), *Organisation and Environment: Managing Differentiation and Integration*, Boston, Harvard University Press.

Levy, M. and P. Powell, 1998, 'SME flexibility and the role of information systems', *Small Business Economics* 11 (2), 183-196.

March, J.G. and H. A. Simon (1958), *Organizations*, New York, Wiley.

Miller, D. and P.H. Friesen (1980), Momentum and revolution in organizational adaptation, *Academy of Management Journal*, vol. 23, no. 4, p. 591-614.

Miles, R.E. and C.C. Snow (1978), *Organizational Strategy, Structure and Process*, New York, McGraw-Hill.

Mintzberg, H. (1979), *The structuring of organizations*, Englewood Cliffs, N.J., Prentice Hall.

Moreno-Luzón, M.D. and F.J. Peris (1998), Strategic Approaches, organizational design and quality management; Integration in a fit and contingency model, *International Journal of Quality Science*, vol. 3, no. 4, p. 328-347.

Nooteboom, B. (1994), 'Innovation and Diffusion in Small Firms: Theory and Evidence', *Small Business Economics*, 6 , 327-347.

Perrow, C. (1970), *Organizational Analysis*, London: Tavistock.
Pugh, D.S. and Hickson (1976), *Organizational Structure in its context*, Farnborough Hants, Saxon House.
Quinn, J.B., H. Mintzberg and R.M. James (1988), *The strategy process: concepts, contexts, and cases*, Englewood Cliffs, Prentice-Hall.
Robbins, S.P. (1990), *Organization Theory: Structure, Design and Applications*, 3rd edition, Englewood Cliffs, Prentice Hall.
Williamson, O.E. (1975), *Markets and Hierarchies: Analysis and Antitrust Implications*, New York, Free Press.
Woodward, J. (1965), *Industrial Organization: Theory and Practice*, Oxford, Oxford University Press.
Young, R.C. and A. Francis, 1993, Innovation, high-technology use, and flexibility in small manufacturing firms, *Growth & Change*, 24 (1), 67-83.

Table 1 Overview of organisational structure variables as used in various studies.

Pugh and Hickson (1976)	Mintzberg (1979)	Dewar et al. (1980)	Geeraerts (1984)	Robbins (1990)	Burton and Obel (1998)
specialisation	specialisation		specialisation	complexity	complexity
			differentiation		
centralisation	decentralisation	centralisation	decentralisation	centralisation	centralisation
formalisation	formalisation	formalisation	formalisation	formalisation	formalisation
standardisation	coordination mechanisms	task routine			coordination and control

Table 2 Variables in the analysis

Variable description	Type	
CONTROL VARIABLES		
line of business	9 classes	
number of employees	3 classes	
low cost strategy	3 point	
product/service differentiation strategy	3 point	
diversification strategy	3 point	
relative importance of objectives (growth, continuity, independence)	rank order	
DIVISION OF WORK: COMPLEXITY 1, DEPARTMENTALISATION		
hierarchy		
separate organisational units	boolean	
number of hierarchical levels	scale (max. 10)	
number of managers	scale (max. 10)	
divisional configuration		
tasks grouped by product/service	boolean	
tasks grouped by customer group/segment	boolean	
task grouped by geographical region	boolean	
tasks grouped by process	boolean	
DIVISION OF WORK: COMPLEXITY 2, SPECIALISATION		
task diversity		
job rotation: employees fulfil multiple jobs/functions	3 point	
job variety: work variety in jobs/functions	3 point	
employee specialisation		
employee specificity: tasks are specific to employees	3 point	
employee replaceability: substitution between employees	3 point	
DIVISION OF WORK: DECENTRALISATION		
strategic decisions		
strategic influence by employees	3 point	
strategic autonomy by employees	3 point	
operational decisions		
operational influence by employees	3 point	
operational autonomy by employees	3 point	
COORDINATION: COORDINATION MECHANISMS		
personal coordination		
direct control of owner/manager	3 point	
informal team coordination (mutual adjustment through informal communication)	3 point	
self-coordination (self-monitoring)	3 point	
impersonal coordination		
standardisation of activities (fixed work process)	3 point	
standardisation of goals (specified objectives)	3 point	
standardisation of skills (education and training)	3 point	(excl.)
formalisation		
use of formal communication procedures	3 point	
existence of written formal procedures	3 point	
PERFORMANCE		
Sales growth 2000	5 point	
Profit growth 2000	5 point	
Expected sales growth 2001	5 point	
Expected profit growth 2001	5 point	
Profitability (relative to competitors)	4 point	

Table 3 The main components of organisational structure in SMEs

ITEMS	COMPONENTS 1	2	3	4	5	6	7	8	9
departmentalisation									
separate organisational units	0.649								
number of hierarchical levels	0.690								
number of managers	0.757								
tasks grouped by product/service									-0.455
tasks grouped by customer group		0.633							
task grouped by geograph.region		0.777							
tasks grouped by process		0.423							
specialisation									
job rotation			0.492				0.489		
job variety			0.795						
employee specificity				0.483					
employee replaceability				0.789					
decentralisation									
strategic influence					0.827				
strategic autonomy					0.874				
operational influence						0.903			
operational autonomy						0.910			
coordination									
direct control by owner/manager	-0.538								
informal team coordination							0.674		
self-coordination								0.821	
standardisation of activities									0.572
standardisation of goals									0.665
formal communicat. procedures									0.681
written formal procedures									0.644

Principal Component Analysis followed by varimax rotation (convergence after 12 iterations). The kink in the scree plot determined the number of factors. The ninth unrotated factor had an eigenvalue of 0.955. Only contributions exceeding 0.40 are listed. The measure for standardization of skills was excluded from the analysis. The formulation was flawed. It measured HRM practices rather than standardization. In the factor analysis it did not reach the threshold of 0.4 on any of the factors. A PCA with oblique rotation was also performed. Factors were largely similar.

Table 4 Component means and variations across size classes

	SIZE		
	1-9 empl	10-49 empl	50-99 empl
standardisation	2.01	2.23	2.43
	(.55)	(.51)	(.46)
departmentalisation 1 (hierarchy)	1.29	1.80	2.40
	(.60)	(.59)	(.56)
departmentalisation 2 (complexity)	1.11	1.14	1.41
	(.98)	(.96)	(.94)
specialisation 1 (task diversity)	2.58	2.48	2.41
	(.46)	(.47)	(.43)
specialisation 2 (employee)	2.05	2.14	2.25
	(.56)	(.53)	(.49)
decentralisation 1 (strategic decisions)	1.50	1.48	1.51
	(.51)	(.51)	(.50)
decentralisation 2 (operational decisions)	1.70	1.77	1.85
	(.70)	(.71)	(.74)
team coordination	1.47	1.48	1.43
	(.52)	(.46)	(.45)
self coordination	2.34	2.26	2.35
	(.69)	(.71)	(.69)

(N = 1411. Means with standard deviations in brackets. Only departmentalization 1 (hierarchy) for 50-99 employees is significantly different from the other size classes...

Table 5 Typical organisational structures for SMEs with 1 to 99 employees (for label descriptions see further tables)

	Clusters								
	A	B	C	D	E	F	G	H	I
standardisation	0	-	0	+	0	+	0	+	0
departmentalisation 1 (hierarchy)	-	-	0	0	0	+	-	+	0
departmentalisation 2 (complexity)	-	0	0	++	-	0	0	++	0
specialisation 1 (task diversity)	+	+	-	0	+	0	-	0	+
specialisation 2 (employee)	0	-	-	0	0	+	0	+	+
decentralisation 1 (strategic decisions)	0	0	-	0	0	0	-	0	+
decentralisation 2 (operat. decisions)	0	++	0	0	0	0	0	+	++
team coordination	+	+	-	0	+	0	-	0	+
self coordination	++	+	--	-	-	0	++	+	0
N	82	56	87	207	133	403	83	264	96

(Based on a cluster analysis of all 1411 observations with employees. Scores have been translated from values to deviations from the mean (+ 10% sign. level, ++ 5% sign. level, - 10% sign. level, -- 5% sign. level)

Table 6 Good fit for performance

		OBJECTIVE	SIZE	STRATEGY	SECTOR
A	focused multifunct. team	growth, continuity	1-9	focus	manufacturing, construction, hotels & catering, non-private
B	operation. autonomy	growth		weak differentiation, not focus	rental, financial
C	entrepreneur - tight control	(continuity)			trade & repair
D	complex multi-unit	growth, independence	1-9, 10-49	not focus	non-private
E	simple, singular			focus, weak low-cost	rental, other services
F	focused hierarchy	growth		weak low-cost	construction, transport
G	entrepreneur - loose control	(continuity)			
H	coordin. complex hierarchy	independence			construction, hotels & catering, financial
I	autonomous team	continuity, independence	1-9		trade & repair, financial
J	without employees			(differentiate)	trade & repair

(The table is based on analysis of means and variances per cluster, across control variable values (10% sign. level, difference from zero). We have included a tenth cluster 'independent entrepreneurs (without employees)'. They are a substantial share of the SME population (more than 10%). The result is in brackets if it significantly differs (5%)

Table 7 Poor fit for performance

		OBJECTIVE	SIZE	STRATEGY	SECTOR
A	focused multifunct. team	independence			rental
B	operation. autonomy			weak focus	manufacturing, construction
C	entrepreneur - tight control	growth, independence	1-99	not differentiation, not focus	manuf., constr., trade & repair, hotels & catering
D	complex multi-unit				transport
E	simple, singular				non-private
F	focused hierarchy	independence		not differentiation, not focus	rental
G	entrepreneur - loose control	growth, independence	1-99	differentiation, low-cost	non-private
H	coordin. complex hierarchy	growth	1-9	not differentation, not low-cost, not focus	trade & repair, rental
I	autonomous team	growth		low-cost	construction, hotels and catering
J	without employees			weak differentiation, weak focus	transport, rental, financial

(The table is based on analysis of means and variances per cluster, across control variable values (10% sign. level, difference from zero))