

# Planning Comprehensiveness and Strategy in SME's

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**ABSTRACT.** Although it is generally assumed that planning is of great value for Small and Medium Sized Enterprises (SME's), little is known about the conditions that influence the organization of the planning process. In this paper it is hypothesized that planning comprehensiveness is, to a certain extent, related to the complexity and variability of the strategies pursued by SME's. This hypothesis is partially supported by an empirical study in which 154 SME's in the Dutch Machinery Industry are involved.

## Introduction

What is the value of strategic planning for Small and Medium Sized Enterprises (SME's)? Several researchers have attempted to contribute to the discussion of this question by studying the relation between strategic planning and the performance of SME's. One has to conclude, however, that their results do not point in the same direction. Robinson and Pearce II (1983) did not find a relation between strategic planning in SME's and organizational performance. Ackelsberg and Arlow (1985), however, came to the conclusion that there is a positive relation between the two constructs. Bracker and Pearson (1986) reached the same conclusion. Dollinger (1984) found a direct relationship between boundary spanning activities and the performance of SME's.

The differences in the results may be caused by the fact that planning in certain circumstances is simply not as important as is always assumed. In order to gain more insight in the value of planning, it is pressing to study the hypothesis that the value of planning for SME's is dependent on the circum-

stances facing the SME's. This paper attempts to contribute to this hypothesis by studying the relationship between planning comprehensiveness and the complexity and variability of the strategies followed by SME's. In other words, it is hypothesized that strategic complexity and variability are circumstances (contextual variables) that influence the comprehensiveness of planning processes in SME's. If the hypothesis is supported, a first step is made in gaining insight in the contingencies that influence the importance or value of strategic planning.

The structure of the paper is as follows. First, the theoretical background of the hypothesis concerning the relation between planning comprehensiveness and strategic complexity and variability is given. Second, the research method used and the operationalization of the constructs is described. Third, the results of the empirical study are discussed. The paper is rounded off with some conclusions.

## Theoretical background

Galbraith and Nathanson (1978) argued that there should be congruence between the strategy of an organization and the processes that take place within the organization. They asserted that not all processes (of which planning is one) are equally effective in designing and implementing a strategy. Their perspective is in line with that of Miles and Snow (1978), who hypothesized that the processes in organizations should match the requirements of the product-market combinations and the technologies chosen for production and distribution. In an effort to develop their theory, the authors offered four types of strategies and compared these types on the basis of, among other things, their planning processes. They argued, for instance, that planning in organizations that are in a

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continuous state of development should be broad rather than intensive and that it should be problem-oriented. On the other hand, planning in organizations that attempt to locate and exploit new products and market opportunities while simultaneously maintaining a firm core of traditional products and customers should be intensive and comprehensive.

Despite the efforts of these authors to shed some light on the relation between strategy and planning, Jemison (1981) concluded that: "Most researchers in strategic management would probably agree that the content of a strategy is affected by the processes whereby the strategy is developed and implemented. Also there is probably agreement that the processes available to managers are affected by the content of previous strategic decisions. But, our knowledge of content and process research may not advance beyond these general agreements unless researchers identify points of communality between content and process issues and then concentrate on expanding our knowledge in those areas".

Since then, several authors have attempted to contribute to the issue by conducting empirical research. In their study among 48 U.K. companies, Grinyer, Al-Bazzaz and Yasai-Ardekani (1986) found that the greater the perceived need for new products, the wider was the scope of written strategic plans. They also concluded that diversification and divisionalization were positively related to the formality and scope of planning.

Miller (1987) tried to relate several common dimensions of business-level strategy to characteristics of decision making. He distinguished three types of strategies:

- *Complex innovation*, which involves the degree to which the firm introduces major new products or services.
- *Breadth*, which refers to the scope of the market that the business caters to: the variety of customers, their geographic range and the number of products.
- *Breadth innovation*, which is the combination of the two previous mentioned strategies: companies which innovate by conquering of new product-market combinations.

Miller studied the relation between these strategic dimensions and variables that can be considered

as operationalizations of decision making. He used the following variables:

- *Scanning*, which involves the search for problems and opportunities in the external environment of the firm.
- *Analysis of major decisions*, which refers to the time spent on correlating symptoms to get at the root of problems and efforts spent on generating solutions.
- *Multiplexity of decisions*, which refers to the range of factors that are addressed in strategic decisions.

Miller concluded that there is a positive relation between the three strategic dimensions and the decision making variables. All three strategic dimensions correlated positively with the variables "scanning" and "multiplexity of major decisions". The dimension "complex innovation" was also significantly related with the variable "analysis of decisions".

Segev (1987a, 1987b) focused on the relation between the strategic typology developed by Miles and Snow (1978) and the three modes of strategy making described by Mintzberg (1973). He hypothesized that there should be a fit between the strategy types and the strategy making modes. His findings clearly indicated links between the two typologies. The entrepreneurial mode of strategy making was mostly employed by Prospectors and Analysers, less by Defenders and least by Reactors. The adaptive mode was mainly used by Reactors, less by Analysers and Defenders and least by Prospectors.

Pearce II, Robbins and Robinson (1987) studied the impact of grand strategy on planning formality. The authors distinguished four grand strategies:

- *Stability strategy*: the firm continues to serve customers in the same or similar product/market domain.
- *Internal growth strategy*: the firm emphasizes growth predominantly through internal development from within the company.
- *External acquisition growth strategy*: the firm emphasizes growth predominantly from acquisition of, merger with, or joint ventures with other firms.
- *Retrenchment strategy*: the firm tries to im-

prove performance by scaling down the level and/or scope of its product/market objectives by cutting down costs and by reduction in the scale of operations through divestment of some units or divisions.

The authors concluded that there were no significant differences in the mean level of strategic planning formality among the four grand strategy types.

Summarizing the research one has to conclude that the results point in different directions. Some authors found a relation between strategy and planning and some did not. This can be the result of the different methodologies used and the different ways in which the concepts of strategy and planning were put into operation. Miller (1987), for instance, used *objective* indicators to measure his strategic dimensions, as did Grinyer, Al-Bazzaz and Yasai-Ardekani (1986). In the study of Pearce II, Robins and Robinson (1987) respondents were asked to categorize their "overall grand strategy" in terms of four generic types. These authors did not use objective measures of strategy but the method of self-typing, which is a form of using *subjective* indicators. Segev (1987a, 1987b) also classified companies in strategic categories on the basis of the method of self-typing.

The authors also measured different dimensions of planning. Miller (1987) directs his attention to the time involved and number of factors analysed before decisions are made. Grinyer, Al-Bazzaz and Yasai-Ardekani (1986) analysed the scope and formality of the planning process. Pearce II, Robins and Robinson (1988) restrict their attention to the formality of the planning process. Segev (1987a, 1987b) does not relate the content of strategy to one or several dimensions of planning but relates the strategic typology to a typology of strategy making modes.

In this paper the strategy of SME's is related to the comprehensiveness of the planning process. Planning comprehensiveness is defined as the volume or amount of data that is gathered, processed and interpreted by decisions makers before a strategic decision is made. It should be noticed that in this definition planning is the process that takes place before a strategic decision is made.

It is hypothesized that planning comprehensive-

ness is related to the complexity and variability of the strategies followed by SME's. The complexity of the strategy refers to the number of factors that have to be dealt with in controlling the strategy. When many factors have to be dealt with, decision makers face a complex task in *controlling* the strategy and in *coordinating* strategic decisions. Strategic variability refers to the changing nature of factors that have to be dealt with in *designing* a strategy. If decision makers have to constantly deal with new factors in designing a strategy, they are involved in a highly variable task.

The hypothesis to be tested in this research is that the complexity and variability of the strategy are positively related to the comprehensiveness of the planning process. This hypothesis is supported by Culnan (1983), who found that the usage frequency of information sources is positively related to task complexity. The hypothesis is also congruent with the results of Daft and Macintosh (1981), who found a relation between task variability and complexity and the information-processing requirements of organizations.

The argument behind the hypothesis is the following. When strategic complexity and variability are high, the decision makers will gather, process and interpret additional data in order to be able to coordinate and design strategies. Decision makers who are faced with a complex strategy will — *ceteris paribus* — have to gather, process and interpret more data in order to be able to control the strategy. Decision makers who constantly manoeuvre their company into new environments (variable strategy) also have to scan their environments more frequently than decision makers who follow stable strategies.

## Methods and variables

The hypothesis was tested in research involving 154 enterprises in the Dutch Machinery Industry, each of which had 200 or fewer employees. The data were collected from questionnaires. The number of 154 constituted a response rate of about 23 per cent. The questionnaires were filled out by the CEO of the companies.

### *Measuring planning comprehensiveness*

In developing a planning scale that measures

planning comprehensiveness, a two-step approach was followed. In the first step, it was attempted to develop planning scales per planning activity concerned. Four categories of planning activities were distinguished:

- *Analyzing the present strategic position of the enterprise.*  
Decision makers have to evaluate the position of their company in comparison with competitors on a number of aspects such as financial position, strengths and weaknesses, and market shares.
- *Forecasting the future strategic position.*  
Decision makers have to get insight into opportunities and threats. Therefore they have to make forecasts of, for instance, the future financial position, strengths and weaknesses, and market shares.
- *Generating strategic options.*  
Options or alternatives must be generated to bridge the gap between the present position and the desired position in the future.
- *Evaluating strategic options.*  
Every option has its advantages and disadvantages. Decisions have to be made that are effective in consideration of the results of the strengths, weaknesses, opportunities and threats (SWOT analysis), and that can be implemented by the company.

In measuring how comprehensive companies are in carrying out these planning activities, respondents were asked to rate, on a five-point scale, how comprehensive they are in carrying out these planning activities (see appendix 1).

Cronbach's alpha was computed for each of the four planning activities. Cronbach's alpha measures the reliability of scales. This measure can range from 0 to 1. Churchill and Peter (1984) concluded from their research that 85 per cent of scales that were published in leading market journals met the criterium of 0.5 and that in 69 per cent of the cases the criterion of 0.7 was met. The alphas for each of the four planning activities ranged from 0.75 to 0.83.

Next, each of the companies was scored on each of the four planning scales. The question has to be addressed how each company would be given a score on the planning scales. This question was relevant since it is important that all variables

should be weighted equally. Since there was no arguments for considering any of the variables more or less important, they were given equal weight. The company's scores on each of the four planning scales were measured as the average scores on the variables concerned.

In the second step, an attempt was made to reduce the four planning scales to one that measured the "overall comprehensiveness" of the planning process. For this purpose the Cronbach alpha of the scores on the four planning scales was computed. The resulting Cronbach alpha was 0.85. Since each of the four planning scales was given equal weight, the company's score on this scale was measured as the average score on the four planning scales.

#### *Measuring strategic complexity and variability*

Three strategic dimensions were used as indicators of strategic complexity and variability.

- *Product-market domain.*  
This dimension refers to the number of product-market combinations covered by the company and is a measure of strategic complexity. It was called "organizational domain" by Thompson (1967), and "scope" by Abell and Hammond (1979). Companies that cover many product-market combinations have to scan more factors in the environment than companies that are active on a small number of combinations. Companies that comprise many product-market combinations have to study their strategic position in each of the combinations and have to analyse competitors and consumers in each of the combinations. Accordingly, their planning process has to be comprehensive.
- *Product-market dynamism.*  
This dimension refers to the changes in the number of product-market dimensions that are covered by the enterprise and its a measure of strategic variability. Companies that expand their business to new product-market combinations manoeuvre themselves into new environments. Companies that have stable product-market combinations operate in a relatively more stable environment and can therefore have a more limited planning process.

— *Product-market innovation.*

This dimension refers to the share of sales accruing from new or fundamentally modified products and newly acquired customers and is also a measure of strategic variability. This dimension is a peculiarization of product-market dynamism. Companies can expand their number of product-market combinations. This, however, does not reveal whether the company is largely dependent on these combinations. The share of sales accruing from new or modified products and new clients gives an indication of the dependence on newly acquired product-market combinations.

The variables used to measure these three dimensions are given in appendix 2. Again, Cronbach's alpha was used to measure the reliability of the three dimensions. The scores on Cronbach alpha were:

- product-market domain: 0.65
- product-market dynamism: 0.71
- product-market innovation: 0.60

These results were not excellent but could be considered satisfactory. The company's score on each of the dimensions was computed as the average score on the variables that constitute a dimension.

In an attempt to get insight into the relation between planning comprehensiveness and strategy, it is possible to compute correlation coefficients between the planning scales and each of the three strategic dimensions. A multivariate regression analysis, in which the three strategic dimensions are the independent variables and planning comprehensiveness is the dependent variable, could be another method to get insight in the relation between the two constructs.

Like any complex system the strategy construct, however, does not permit independent study of its constituent elements — the nature of which exists only as a *unitas multiplex* (Galbraith and Schendel, 1983). Specifying strategy variables as independent forces neglects a fundamental theoretical point: strategies represent a network of interactions among the various constituent elements that ultimately make up a business strategy.

Although each of the strategic dimensions can have a positive relation with planning comprehen-

siveness, the patterns of interactions between the strategic dimensions may not. Hambrick (1983) put it this way: "But, because regression quite literally identifies the isolated effects of each independent variable, nothing is known about whether it makes sense to pursue these characteristics in concert. It may be that this combination of attributes in a single business actually leads to very low performance or, more likely, that this combination simply is not very feasible". It appears to be better to relate planning comprehensiveness to the three strategic dimensions simultaneously. In other words, the development of different strategies or strategic types is called for (for a discussion on the advantages of this approach see also Miller and Friesen, 1984). The strategic types (patterns of strategic dimensions) can then be related to the construct "planning comprehensiveness".

For the purpose of developing strategic types a cluster analysis was used. A two-step approach was used for classifying companies in clusters (strategic types). In the first step, Ward's method was applied. This method is considered to be one of the most accurate hierarchical cluster methods (Punj and Stewart, 1983). For each cluster the means for all dimensions were calculated. Then for each company the squared Euclidian distance to the cluster means was calculated. These distances were summed for all of the companies. At each step, the two clusters that merged were those that resulted in the smallest increase in the overall sum of the squared within-cluster distances. The number of "meaningful" clusters to be analysed could be obtained by analyzing the increase in the error sum of squares when clusters were merged. With the help of Ward's method, five "meaningful" clusters could be obtained.

In the second step, a relocation method was used. This step proved to be necessary because 19 of the companies were classified in a particular cluster while they were closer to the centroid of another cluster. In the second step the companies were relocated until no objects were relocated during a full scan. It can be said that a local optimum solution was obtained. Since cluster results tend to be sensitive to the presence of outliers (companies with extreme scores on the dimensions), twelve outliers (companies) were removed in the relocation procedure. Since one of

TABLE I  
Final cluster solution

|                           | cluster 1     | cluster 2     | cluster 3     | cluster 4     |
|---------------------------|---------------|---------------|---------------|---------------|
|                           | B             | B             | B             | B             |
| product-market domain     | 0.81          | -0.58         | 0.74          | -0.71         |
| product-market dynamism   | 0.17          | -0.38         | 0.92          | 0.28          |
| product-market innovation | -0.38         | -0.98         | 1.26          | 0.67          |
|                           | <i>n</i> = 47 | <i>n</i> = 36 | <i>n</i> = 18 | <i>n</i> = 40 |

the final clusters contained only four companies, this cluster was excluded from the research.

Two aspects are essential in judging the final clusters, namely whether the clusters are stable and whether the clusters are significantly different from each other. The stability of the four clusters was judged by using a discriminant analysis. If the predicted cluster membership of the companies, based on the discriminant function developed, matches the actual group membership, the clusters can be considered to be stable. Firstly, a discriminant function was developed on the basis of 90 companies. The predicated cluster membership matched the actual cluster membership in 98.1 per cent of the cases. Secondly, it was studied if the cluster membership of the 64 companies which were initially left out in the development of the discriminant function could also be accurately predicted on the basis of the same discriminant function. In this case 95.7 per cent of the companies were classified correctly. It can therefore be concluded that the final clusters were to be considered stable.

To judge whether the clusters differ significantly from each other, analyses of variance were also used. In this way it could be studied whether the scores on each of the dimensions varied significantly between the four clusters. The results of the three analyses of variance were highly significant ( $p < 0.01$ ), which means that the scores on all three dimensions differed significantly between the clusters.

Although analyses of variances provided a means of rejecting the overall null hypothesis that the means of the strategic dimensions were the same across the four clusters, they did not specify where the significant differences lie. To partially

overcome this problem, the labelling of the clusters was based on the so-called B-values. Dimensions with a high (absolute) B-value are important for labelling the cluster. The B-value was defined as:

$$\text{B-value} = (U_{jp} - U_j) / \sigma_j^2$$

in which:

- $U_{jp}$  = the average score on dimension  $j$  within cluster  $p$ ;
- $U_j$  = the overall average score on dimension  $j$ ;
- $\sigma_j^2$  = the overall variance of dimension  $j$ .

#### *Cluster 1: stabilization*

The companies in this cluster scored high on the dimension product-market domain. In other words, the strategy is complex. The score on the dimension product-market dynamism was more or less average while the score on the dimension product-market innovation was below average. These dimensions point into the direction of a relatively low level of strategic variability.

#### *Cluster 2: specialization*

The scores on all three dimensions were below average. This indicates a low level of strategic complexity and variability.

#### *Cluster 3: dynamic innovation*

The B-values of each of the three dimensions were high. The companies in this cluster operate on relatively many and newly conquered product-

market combinations. The companies are heavily dependent on the newly introduced products and newly acquired clients. The companies in this cluster appear to have a complex and variable strategy.

#### *Cluster 4: stable innovation*

The B-value on the dimension product-market domain were below average, which indicates a relatively simple strategy. The scores on the dimensions product-market dynamism and product-market innovation were above average. These scores indicate a highly variable strategy.

### Results

To test the hypothesis that there is a relation between strategic complexity and variability and planning comprehensiveness, the scores on the planning scales in each of the clusters were studied. Table II presents the B-values of the planning scales in each of the clusters. Cluster 3 has the highest B-values on the planning scales followed by cluster 4, cluster 1 and cluster 2. This order is in line with the hypothesis that there is a relation between planning comprehensiveness and the strategies pursued by SME's.

Differences in B-values on the planning scales between the clusters do not reveal whether there is a statistically significant relation between the strategy followed and planning comprehensiveness. Although the order in B-values is in conformity with the hypothesis, the differences in B-values may be caused by chance. In order to verify whether the differences are statistically significant, several analyses were conducted. First,

analyses of variance were conducted. The results are given in Table III.

From Table III it can be seen that the null hypothesis (the scores on the scale "overall planning comprehensiveness" are the same for each of the strategies) could be rejected. These scores on the planning scales that measure how comprehensive companies are in forecasting their strategic position differed also significantly between the clusters. As far as these two planning scales are concerned, it could be concluded that there is a relation between the strategies followed by SME's and planning comprehensiveness.

It was not possible to state the direction of the relation between the strategies and planning comprehensiveness on the basis of the analyses of variance. Multiple t-tests are not appropriate for testing the significance of differences between the scores on planning comprehensiveness. This can only be done when the statements concerning the differences are independent of each other. Since this is not the case, the problem is how to allow for this dependence in order to obtain the correct simultaneous confidence level for the whole system of statements. When multiple t-tests are used, the probability of Type I error (rejecting the null hypothesis when it is true) increases with the number of inter-group means that are tested for significance. A way to deal with this problem is to use Scheffe's test. With this test, the whole system of differences is tested simultaneously.

On the basis of the results of Scheffe's test it could be concluded that only the scores on the scale "comprehensiveness situation forecasting" differ significantly between cluster 3 (dynamic innovation) on the one hand, and cluster 1 (stabilization) and cluster 2 (specialization) on the other.

TABLE II  
Planning comprehensiveness in each of the clusters

|                                         | cluster 1 | cluster 2 | cluster 3 | cluster 4 |
|-----------------------------------------|-----------|-----------|-----------|-----------|
|                                         | B         | B         | B         | B         |
| overall planning comprehensiveness      | -0.02     | -0.11     | 0.12      | 0.04      |
| comprehensiveness situation analysis    | 0.11      | -0.11     | 0.41      | -0.18     |
| comprehensiveness situation forecasting | -0.06     | -0.24     | 0.26      | 0.19      |
| comprehensiveness generating options    | -0.09     | -0.05     | 0.11      | 0.11      |
| comprehensiveness evaluating options    | 0.06      | -0.05     | 0.03      | -0.09     |

TABLE III  
Results analyses of variance

|                                      | unexplained<br>variation | explained<br>variation | F-value |
|--------------------------------------|--------------------------|------------------------|---------|
| overall planning comprehensiveness   | 4.29                     | 87.65                  | 2.15*   |
| comprehensiveness situation analysis | 3.84                     | 107.74                 | 1.58    |
| comprehensive situation forecasting  | 10.24                    | 108.05                 | 4.17**  |
| comprehensive generating options     | 5.96                     | 162.94                 | 1.59    |
| comprehensive evaluating options     | 2.76                     | 115.89                 | 1.05    |

\*  $p < 0.10$

\*\*  $p < 0.01$

The scores on the remaining planning scales did not differ significantly between the strategic types.

### Conclusions

In this paper it is hypothesized that there is a relation between planning comprehensiveness and strategic complexity and variability. The results only partially support the hypothesis. The scores on the planning scales are in line with the hypothesis. Significant differences, however, could not always be gained. As a matter of fact, it is only the planning scale "comprehensiveness situation forecasting" that varies significantly between the four strategic types. Since the cluster (strategic type) with the highest score on this planning scale also has the highest score on the strategic dimensions "product-market dynamism" and "product-market innovation", it can be concluded that it is most of all the dimension "strategic variability" that is positively related with forecasting practices.

It cannot be concluded, however, that when strategic variability is high, companies *should* have comprehensive planning processes. In this research it was not studied whether SME's in a situation of strategic variability perform better with a comprehensive planning process than SME's with a limited planning process. Frederickson and Mitchell (1984) found that, in a situation in which the uncertainty perceived was relatively large, companies with a limited planning process tended to outperform companies with a comprehensive planning process. According to Braybrooke and Lindblom (1970), attempting to be comprehensive may result in "achieving tomorrow's solution to yesterday's problem".

The issue to be addressed, then, is what to do in a situation of strategic complexity and variability. This issue has hardly been addressed in the literature. The research presented here can be regarded as an attempt to identify situations that influence the comprehensiveness with which planning activities are carried out in SME's. The next step can be to study when comprehensive planning processes are more effective and when they are less effective.

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### Appendix 1: operationalization of planning comprehensiveness

The respondents have been asked to rate on a five point scale how comprehensive they are in executing the following activities before important decisions are being made.

#### Analyzing the present strategic position

- analyzing the present financial position of the company
- analyzing the present financial position of the main competitors
- analyzing the strengths and weaknesses compared with the main competitors
- analyzing the market shares of the company's most important products
- analyzing the market shares of the competitors' most important products

#### Forecasting the strategic position

- forecasting the financial position of the company

- forecasting the financial position of the main competitors
- forecasting the number of new competitors
- forecasting the market shares of the company's most important products
- forecasting the market shares of the competitors
- forecasting the market size in volume and sales

#### Generating strategic options

- generating alternatives to realize the company goals
- generating sensitivity analyses or "what, if . . ." analyses
- generating different scenarios to anticipate unexpected developments

#### Evaluating strategic options

- evaluating alternatives on the possibility of integrating them into the overall strategy
- evaluating alternatives on the company goals
- evaluating alternatives on acceptance by employees
- evaluating alternatives on the financial position of the company

### Appendix 2: operationalizations of strategic dimensions

#### Product-market domain

- number of products in the company
- number of product groups in the company
- number of clients served by the company
- number of market segments served by the company

#### Product-market dynamism

- number of products in the company compared to five years ago
- number of product groups in the company compared to five years ago
- number of clients served by the company compared to five years ago
- number of market segments served by the company compared to five years ago

#### Product-market innovation

- percentage sales accruing from products fundamentally renewed or newly introduced the last five years
- percentage sales accruing from clients newly acquired the last five years

The variables which operationalized product-market domain and product-market dynamism have been measured on a seven point scale. The variables that operationalized product-market domain have been measured in terms of percentage of sales.

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