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**Choosing between [potential] friends: Market Segmentation in a small company**

By

*Peter Naudé and Lindsay Cheng*

University of Bath  
School of Management  
Claverton Down  
Bath BA2 7AY, UK  
Tel: +44 (0) 1225 383772  
P.Naude@bath.ac.uk

and

Eatec Limited  
3 Armstrong Court  
Armstrong Way  
Yate  
Bristol BS37 5NG, UK  
lcheng@eatec.co.uk

**Address for Correspondence:**

Pete Naudé, School of Management, University of Bath, Claverton Down, Bath BA2 7AY, UK  
Tel: +44 (0) 1225 383772, Email: P.Naude@bath.ac.uk

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### **Abstract:**

The relationships between companies, and the complex network contexts within which they operate, lie at the very heart of the IMP Group's understanding of how business-to-business markets operate. But an earlier and sometimes more fundamental question is often ignored: just how do companies generate these relationships and networks in the first place? This is clearly a resource-dependent activity, since the generation and follow-up of potential leads is an expensive and time-consuming managerial activity. In this paper we follow the activities of the managers in a small company operating in a high-technology segment of the engineering industry, in their attempts to generate extra business from the marketplace. We examine the extent to which the traditional approaches to b2b segmentation proved to be useful, and comment on an aspect that is too often ignored: having segmented a market, how should managers evaluate different segments?

**Keywords:** Business-to-Business segmentation, multi-criteria decision making, judgmental modelling

**Please note:** Some of the data in this case have been altered/disguised to protect commercial sensitivity

## **Choosing between [potential] friends: Market Segmentation in a small company**

### **Introduction - The Company Context**

Eatec Limited is a small independent company based in the Southwest of England, providing a number of engineering services in six different areas: Finite Element Analysis, Structural Integrity, Computational Fluid Dynamics, Testing, Mathematical Modelling/Simulation, and Data Handling. The company has been in existence since 1991, and currently has a turnover of around €1.2m, employing about 20 people. Solutions are sold direct to design and research groups mainly within large organisations such as the Oil and Gas Industry. Client companies are typically involved in the development of new products, resolution of engineering problems or undertaking research.

The company is now looking to expand beyond its traditional areas of Oil and Gas. Business to date has typically been gained opportunistically. However, based upon both a wish by the managers to grow the company more rapidly, and also a related in-house development of additional competencies (e.g. specific aspects of database management and bespoke software development), the identification of new opportunities is a key part of the company's growth plans. Eatec's competitors typically market themselves either as experts in one or two particular service technologies such as a Finite Element Analysis or Computational Fluid Dynamics, while others position themselves as experts in particular industrial segments, such as the Oil and Gas industry or the Aerospace industry. The

problems facing the company therefore centred round not just knowing which markets to target, but also which of their technologies were likely to be most in demand in which industries.

While the management is keen to stay at the leading edge technically and provide solutions to challenging problems in the engineering industry, insufficient knowledge of the markets it operates in, and a lack of appropriate marketing approaches, has prevented the company from achieving rapid profitable growth. In addition, a lack of knowledge of new markets and of dedicated in-house marketing expertise has made it even more difficult to decide which services or industries to expand into. It was proposed that a detailed marketing strategy, addressing both prioritisation of the market sectors and the technical applications in which Eatec chooses to specialise, was required in order that the company can develop more rapidly. This involved a thorough and comprehensive strategic planning process to be carried out by the managers, the details of which are not discussed here. Instead we focus just on the segmentation process, and conclude with an appraisal of the extent to which the experience of the managers involved overlaps with some of the current views on market segmentation.

### **Segmentation of Industrial Markets**

One of the most convenient ways of undertaking segmentation in B2B markets is by using the Standard Industrial Classification (SIC) code, although it can be criticised for being too simplistic, biased towards manufacturing rather than services, and indeed even misleading, too highly aggregated, often out of date, and not necessarily sufficiently

related to the need of the user (Mitchell and Wilson, 1998; Walker, 1998). However, given the rise of cheap and readily available databases of companies on a regional or national basis, it remains a useful standardised and comprehensive form to give some preliminary indication of the industrial segments in the market.

A managerially more useful approach was proposed by Shapiro and Bonoma (1984), and is illustrated in Figure 1. This is essentially a five-layered nested model, the logic being that the segmentation process should start with the outermost variables, and work inwards until a “good enough” schema is found, given that each successive layer increases in complexity and cost.

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Take in Figure 1 about here  
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Shapiro and Bonoma argue that there are two generic approaches to segmentation. The first (Needs/Benefits) is predominantly customer driven whereby, depending on how customer needs vary, a vendor will adopt a separate marketing strategy to provide the products or service for each market segment. The advantages are obvious as this drives segmentation through its most important variable - customer needs. However, they recognised that this was not always easy to implement, and hence proposed a second approach (Identifiable/Accessible), one more based upon the vendor’s capabilities. In such an approach, target segments are identified based upon readily available secondary data (e.g. SIC codes), with access being determined by the technological capabilities of the supplier, rather than by the needs of the buyer.

Bonoma and Shapiro (1984) argued that in many businesses only the most simple and intuitive segmentation attempts are made at segmentation, echoing earlier sentiments of Wind and Cardozo (1974). Since this early work a number of authors have examined the range of variables that might be used to segment B2B markets (Wilson, 1986; Goller et al., 2002). While most of these approaches advocate using parameters that are measurable to varying degrees, Millier (2000) examines in more detail the role that intuition could play in segmentation decisions, arguing that this is an excellent way to synthesise the vast range of a data relevant to segmentation that managers collect through experience.

### **Operationalising the idea of Market Segmentation and Selection**

The idea of segmenting markets, of breaking them down into relatively homogeneous groups that are then selectively exploited, is intuitively logical and appealing. However, it is recognised that a number of problems exist in putting the theory into practice (Dibb and Simkin, 1994; Palmer and Millier, 2002; Dibb and Wensley, 2002). Among these are the issues of context, interactivity, difficulty, and implementation.

The difficulties surrounding the *context* arise out of recognition that in specific circumstances and conditions, generalised and prescriptive guidelines may be inappropriate. As Freytag and Clarke (2001) argue, no two companies are the same, which makes it difficult to develop one segmentation methodology to fit all environments. The generation of a generic model by simply adding more criteria to be used to choose between markets, does not simplify the task for managers.

The notion of *interactivity* recognises the fact that the application of complex, linear and step-by-step guidelines for managers may be inappropriate because suppliers and buyers are in a constantly changing environment, one in which development, learning, and feedback loops all exist. On the other hand, the logic of segmentation, targeting, and positioning is a largely linear process, carried out at a point in time (Sollner and Rese, 2001). But no sooner has a segmentation study been conducted, than it is out of date and continues to decay. In addition, the managers concerned may have other contextually relevant and appropriate information at the time, but be unable to utilise it because it does not fit readily within the segmentation framework proposed (Palmer and Millier, 2002).

While segmentation has been identified as a key strategic element of the marketing activity, the process is both *demanding and difficult*, not as easily undertaken as the textbooks argue. The process demands both time and attention, but managers are often diverted by urgent but less important and short-term issues (Mintzberg, 1973). As a result, work gets pushed aside and avoided due to lack of understanding as to how to undertake the segmentation process, and not knowing how to approach it. Saunders (1987) and McDonald (1995) suggest that academic publications underestimate the problems of ‘real world’ applications and argue that they lack in giving practical help. Similarly, research in the field of industrial chemicals industry (Dibb, 1998) identified a commonly occurring question from managers: “What do I do with the segments once I have them?”

Even if managers undertake and achieve an appropriate segmentation process, they still have to rely on colleagues in other departments to *implement* the actions arising (Dibb and Simkin, 2001; Palmer and Millier, 2002). The former in particular focus on three barriers to segmentation: those concerning infrastructure, process, and implementation issues. Barriers to effective implementation include the fact that managers are often given insufficient guidance on making segmentation work, and also the topic we explore further in this article: just how to evaluate the corporate attractiveness of different segments, all of which potentially compete for resources such as financial investment and managerial time.

Freytag and Clarke (2001) argue that in order to select the best segments, managers need to conduct thorough studies of different market segments and selected those that create competitive advantage for the company. A segment that is large, growing, and has little competition, may not be the right choice for a company when internally, it is unable to achieve its desired position in the market because of financial or other managerial constraints. Freytag and Clarke (2001) offer a multi-step process to help managers find a match between segment demands and optimal use of their company's skills and capabilities, as shown in Figure 2. The process begins with an on-going review of segment identification and evaluation, followed by a phases involving both company capabilities and segment requirements. They propose that the initial evaluation phase utilises easily identifiable variables such as segment size, growth, customer needs, and the fit with the company's core competence, echoing the earlier work of Shapiro and Bonoma (1984). The thorough evaluation of the segments that remain of interest, is then

carried out using criteria agreed by management such as potential profit and expected demands on company resources stage.

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Take in Figure 2 about here  
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The process of just how to evaluate segments has been largely ignored in the literature, falling perhaps more logically in the domain of decision science and operational research. Although segment evaluation and selection is an interesting topic, it is understandable as to why there has been little guidance on how to undertake the task, since the process of finding the segments that best match a company's capabilities should reflect the company's unique situation (Freytag and Clarke, 2001). Due to the complexity of varying business-to-business environments and different requirements from decision makers, suggesting a normative approach that would suit all would prove to be difficult in business-to-business segmentation.

Palmer and Millier (2002) offer a fairly generic approach to the task, based upon their idea of utilising managerial intuition. Their methodology was built on the implementation model as described by Simkin (1996), using action learning (Weinstein, 1995). Criteria relevant to both the customer base and the firm were defined, and a series of scales (low, medium and high) was then agreed which would apply to the criteria. Based upon a case study, they showed how a firm's marketing team facilitated the scoring of these customers by the management team against the criteria identified and moderated the results in order to arrive at an agreed series of scores (Palmer and Millier, 2002). By

using a pattern matching process (Miles and Huberman, 1994), the information was compared and contrasted to eventually arrive at an agreed view of the segmentation (Palmer and Millier, 2002). The scores for the various criteria were plotted on a radar diagram, giving a visual basis for comparison between different customers. In addition, the management team devised a profile for the most desirable type of customer, which was also displayed on the radar diagram, thereby giving a datum point by which they could judge the desirability of customers when considering the grouping of customers on the basis of their profiles into segments.

### **A Case Study – Eatec Limited**

This case study will describe how Eatec Limited executed its segmentation strategy over about a 24-month period. We describe the various stages that the managers of the company went through first, and then offer some reflections about the process. The various phases of the managerial process are shown in Figure 3.

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### **Stage 1: Exploratory Market Research**

Exploratory market research was initially carried out on 10 different industries in order to do a relatively quick assessment as to whether or not they should warrant further attention. This type of initial scrutiny has the obvious disadvantage of potentially excluding a segment that might subsequently prove to have been profitable, but is often recommended in decision frameworks (e.g. Wind and Cardozo, 1974) and also found in

practice (e.g. Lockett and Naudé, 1991). These industries were identified by the managers as being those in which either (a) the company had some prior experience, or else (b) those in which it was thought that their offering might prove attractive. The aim was to gain an insight and understanding of the possible market opportunities and how Eatec's engineering service could be applied to the targeted industry's engineering problems or needs. The industry sectors identified were:

- 1) Defence
- 2) Consumer Goods
- 3) Food and Paper processing
- 4) Rail
- 5) Automotive
- 6) Oil and Gas
- 7) Medical Engineering
- 8) Aerospace
- 9) Monitoring of Transportation - **subsequently removed**
- 10) Expert Witness – **subsequently removed**

Each of these surveys took about a week to complete, and provided the decision makers with an exploratory understanding about the different industries. It was decided that the Expert Witness and Monitoring of Transportation segments were in fact not unique segments, but could co-exist within any of a number of the other segments. In the case of the Expert Witness segment, it was felt that too much time and experience was required in order to gain the credibility necessary to succeed. The Monitoring of Transportation was felt to be useful mainly in the consumer goods industry. As a result, the managers decided that the company would offer these two services on an opportunistic basis only. In fact, Monitoring of Transportation was subsequently regarded as a service area in which the company had some experience in its own right, and added to the original list of six industries given on page 3.

The managers involved now faced a typical business-to-business segmentation problem – on which of the remaining eight segments should they focus their attention? Most of the classic business-to-business marketing literature on how to segment markets (as described above) was reviewed by the decision makers, but unfortunately seemed to provide little assistance - as forewarned by Dibb and Simkin (2001). What they needed to know was not how to carry out segmentation but how to choose and evaluate between the market segments which had been researched.

### **Stage 2: Judgmental Modelling**

In order to facilitate the decision making process, the managers were introduced to judgmental modelling, a multi-criteria decision making (MCDM) decision tool aimed at helping managers in choosing between various decision alternatives (Saaty, 1980; Islei and Lockett, 1988, Lockett and Islei, 1989). This is a generic decision modelling approach, based upon three stages: deciding the attributes upon which a decision is to be based, allocating weights to the different attributes, and then scoring each alternative on the attributes. It has been used in a number of different b2b contexts (e.g. Islei et al, 1991, 1999; Lockett and Naudé, 1996; Naudé et al, 1997). In this case, the three managers within the company all agreed to act independently and then to discuss their individual results upon completion. (This is generally regarded as best practice, although evidence exists as to the role that personality can play in searching for consensus in any subsequent discussions – see Naudé et al, 2000).

Before any decision could be made, it was important that the attributes of the decision were agreed upon. These were discussed by the managers at some length, and are shown in Table 1.

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Take in Tables 1 and Figure 4 about here  
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Essentially, what Eatec wanted to do was to operationalise a combination of both the ‘Needs/Benefits Approach’ and the ‘Identifiable/Accessible Approach’ as suggested by the Bonoma and Shapiro (1984) framework. That is, they wanted to use the MCDM-based approach to implement business segmentation in which they assessed both the needs of the customers (such as the extent of R&D activity, the need for consultancy) but to temper this with some variables related to Eatec’s own skill set (prior experience, competition levels).

We can see from Figure 4 the complex but highly structured nature of the decision making process. In terms of traditional multiple criteria decision making methodology, the task facing the managers was now to (a) evaluate the relative importance of the nine attributes shown in Level 2, and then (b) to evaluate how each of the eight potential market segments scored against these same attributes.

The first step was to analyse the extent to which the three managers agreed upon the importance of the attribute set that they has agreed to use. Their individual results are

shown in Table 2. We can see that there were both significant differences and similarities in their perceptions: all three regarded their company's relevant expertise and the level of prior experience as the two most important variables (classical 'identifiable/accessible variables as per Bonoma and Shapiro (1984)), although the weight allocated varied considerably (17.5 to 29.6 in both cases). For all three managers there were a high number of equal scores, with manager EF effectively using just three different weights.

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Take in Table 2 about here  
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The second step of the process involved each manager scoring each of the eight segments on each of the nine attributes. It was here that the process began to falter. The managers felt that the attributes shown in Table 2, while indeed relevant to each segment, in fact varied in importance for each of the six service sectors in which they operated (the top level of the hierarchy in Figure 4 – Finite Element Analysis, etc.), and hence that while a classical MCDM approach could work, it would be too costly in terms of the time spent on the process if it were to be repeated several times.

A pilot test was carried out prior to pursuing the analysis for all 8 services. This was to ensure that everyone's understanding of the weighting scale was consistent and that the approach was providing helpful and meaningful results. Each decision maker carried out the exercise for just three of the services, and then discussed their findings to check if the results were more or less in alignment. The services chosen for the pilot stage were those in which Eatec had lots of experience and knowledge of over the years. As a result, by

checking the pilot results for internal consistency, they felt that they were able to verify the results to some extent based upon their own experience and intuition (Millier, 2000).

Once these initial results were obtained, the decision makers compared and discussed the results. The surprise finding was that the resultant outcome did not entirely match what had been expected. Several years of practice in engineering consultancy meant that the decision makers felt that they had sufficient experience to recognise instinctively the likely outcome, or had a ‘gut feel,’ of what the most attractive segments would be. The decision makers felt that perhaps the weightings were not representative, which therefore explained why the results did not turn out as the ‘gut feel’ had expected them to be.

### **Stage 3: Review and Revise the Process**

Given their reticence to use the judgmental modelling approach, and yet cognisant of the need to formalise the process, a modified process was developed. In this new approach, each decision maker was asked to take into account all the market knowledge gained from the earlier reports, as well as their own experience and initiative, and then to make a judgment by rating each of the eight market sectors on a scale of 1-5, with a score of 5 indicating that conditions are very favourable for investing in that segment. Adoption of this approach meant that each manager was faced with an 8x8 matrix: a choice of 8 industry segments on the vertical scale, and 8 product offerings on the horizontal (these were made up of the original six shown on page 3, plus transportation monitoring [see page 11], plus an additional “overall company” category.). Each product/market was then evaluated on the 5-point scale. After this was completed, each of the decision maker’s

scores were summed across all product/market categories. Working with the three decision makers, the data were tabulated as shown in the resultant Table 3, which assisted in the evaluation of the different market sectors.

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Take in Tables 3 and 4 about here  
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In this table the letters A → H represent the eight (confidentially rearranged) segments originally shown on page 11, while the numbers in brackets represent the sum of all three decision maker's scores. So we can see, for example, that when they were considering Finite Element Analysis (FEA), the three managers' combined score was 13 out of a possible 15, placing market segment B in the top position, ahead of C in second position. Overall, there was clearly a strong preference for segments A and B: while B was ranked top in four of the seven service areas, A was ranked top in three of them but was also regarded as being the top "overall" segment (in which it scored the maximum of 15 points).

In Table 4, the total marks are shown for each market segment ("Total Score") by summing across each segment in Table 3. We can see the top four market sectors, in order, are A, B, D and C. However, there is an element of double counting and/or of the "halo effect" here, in that if a particular segment scores well across the various services, it is also likely to score well in the "Overall Company" column, and yet this column was used to calculate the total scores shown in Table 4. For this reason, the final column ("Score Excluding Overall Company") shows the scores of the various segments, but

excludes the overall company score. We see again that it is segments A and B that are regarded as having the best potential, followed by C and D (whose order varies).

Following this process, it was agreed by the managers concerned that the market segments A, B, C, and D would be the targeted in a more direct way, and plans were subsequently drawn up to identify particular companies within these segments.

### **Conclusions – what have we learned?**

The field of judgmental modelling or MCDM is a well-known one, with numerous well-cited examples of successful implementation of the underlying decision making structures (see Islei et al., 1991, 1999; Naudé et al., 1997, for example). And yet in this case study, the application of the methodology demonstratively failed, with the managers involved seeking an alternative approach – why, and what does this potentially tell us about adopting structured approaches to the market segmentation process?

There was no doubt that using an approach based upon MCDM in the segmentation process did initially assist the decision makers in the sense that it helped them to structure their decision hierarchy, and to think about how each attribute that they had identified would affect the marketing strategy. It was felt however, that the disadvantages of using the software overshadowed the advantages in their segmentation exercise. This is because of a number of reasons:

First, the decision structure (Figure 4) was probably too complex, with too many variables and levels of variables being required in the analysis. A corollary of this is that a relatively large number of weightings had to be assigned, and the successive use of the pair-wise comparisons required by the software resulted in user fatigue. In spite of the decision makers involved having undertaken the prior pilot test of the software – or quite possibly because of the pilot test undertaken, it was decided that “we were using a sledgehammer to crack a nut.”

A second set of factors surrounded the scoring process, namely the difficulty involved in defining the relationship between an industry and the associated attribute with a single number. While the subsequent approach used in Stage 3 also required the use of a number, it was felt that this 1-5 scoring process was somewhat easier and intuitively more appealing. Essentially what the revised Stage 3 process did was to remove the structure surrounding level 2 in Figure 4, and instead the managers were required to make the link between levels 1 and 3 directly with a single 1-5 number that intuitively included all the aspects previously identified as being relevant in Level 2.

The third set of factors that hindered the process emerged as a result of having undertaken the pilot test, and of not being intuitively at ease with the resultant answers that “did not conform to our gut feel.” This raises an interesting debate: when decision software yields a ranking of alternatives that does not conform to managers’ prior perceptions, where does the ‘truth’ lie – in the new or the old rankings? An interesting

debate worthy of additional research (see also Islei et al., 1991), but not one necessarily germane to a marketing conference.

Finally, we believe that the case study presented here adds empirical weight to the arguments of both Dibb and Simkin (1994) and also Palmer and Millier (2002) in their discussions surrounding the difficulties inherent in trying to evaluate different market segments. The need to undertake market segmentation makes intuitive sense, and has done so for generations of marketing students and managers. Firms need to find the best potential counterparts in order to mobilise their own networks in pursuit of undertaking “wise trades” in their industry (Mouzas and Naudé, 2003). We know that – but it doesn’t imply that it is an easy process!

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**Table 1**

**The Attributes Used**

<b>No.</b>	<b>Attributes of the Market Segments</b>
1	Size of the market for the type of services that Eatec offers
2	Growth of the segment
3	Extent of technological competition in the segment
4	Eatec's prior experience in the segment
5	Number of medium sized companies
6	Extent to which the segment requires consultancy rather than contractors
7	Extent to which the industry is cost conscious
8	Extent of Eatec's expertise which is relevant to the industry
9	Intensity of competition to Eatec

**Table 2****The Attribute Weights**

Attribute Description	AB		CD		EF	
	Score	Rank	Score	Rank	Score	Rank
Size of segment	5.9	5	1.6	9	1.8	8=
Growth of segment	11.8	3	4.8	8	1.8	8=
Extent of technological competition	8.0	4	9.5	6=	8.8	5=
Prior experience in the segment	29.6	1=	17.5	2	17.5	1=
No. of Medium Sized Companies	4.7	6=	15.9	3	17.5	1=
Extent to which consultancy required	4.7	6=	11.1	4=	17.5	1=
Extent of cost consciousness	2.4	8=	9.5	6=	8.8	5=
The company's relevant expertise	29.6	1=	19.0	1	17.5	1=
The Intensity of the Competition	2.4	8=	11.1	4=	8.8	5=

**Table 3**

**The Stage 3 Results**

	<b>Eatec Services</b>							
<b>Rank</b>	<b>Overall Company</b>	<b>FEA</b>	<b>Structural Integrity</b>	<b>CFD</b>	<b>Testing</b>	<b>MM* &amp; Simulat.</b>	<b>Data Handling</b>	<b>Transport Monit.</b>
<b>1<sup>st</sup></b>	A (15)	B (13)	B (13) A (13)	B (13)	B (15)	A (15)	A (15)	H (15)
<b>2<sup>nd</sup></b>	B (12)	C (12)	C (12)	A (11)	D (10)	D (10) B (10)	D (10) B (10)	F (11)
<b>3<sup>rd</sup></b>	C (10)	D (11) A (11)	D (7) E (7) G (7)	F (8)	A (9)	F (7)	C (8) E (8)	D (9)
<b>4<sup>th</sup></b>	D (9)	E (7) F (7)	F (6)	E (6)	C (7) F (7)	G (6)	G (7)	C (8) A (8)
<b>5<sup>th</sup></b>	E (7) F (7)	G (6)	H (3)	D (5) C (5)	H (6)	C (5) E (5)	H (6) F (6)	B (7)
<b>6<sup>th</sup></b>	G (5)	H (4)		G (4)	E (5) G (5)	H (4)		E (6)
<b>7<sup>th</sup></b>	H (4)			H (3)				G (5)

\* Mathematical Modelling

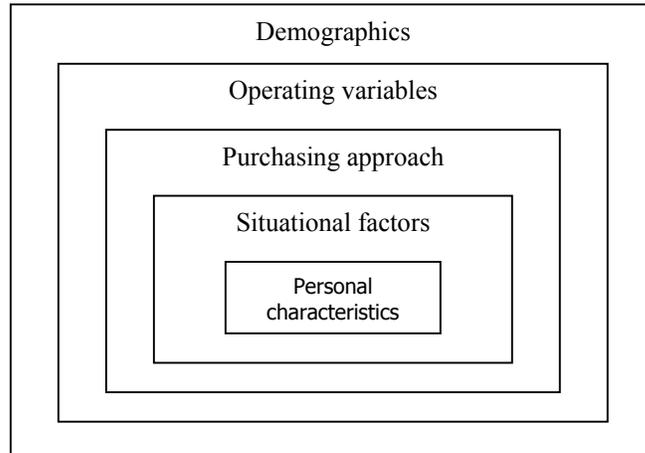
**Table 4**

**Total Scores per Segment**

<b>Markets</b>	<b>Total Score</b>	<b>Score excluding Overall Company</b>
A	97	82
B	93	81
C	67	57
D	71	62
E	51	44
F	59	52
G	45	40
H	45	41

# FIGURE 1

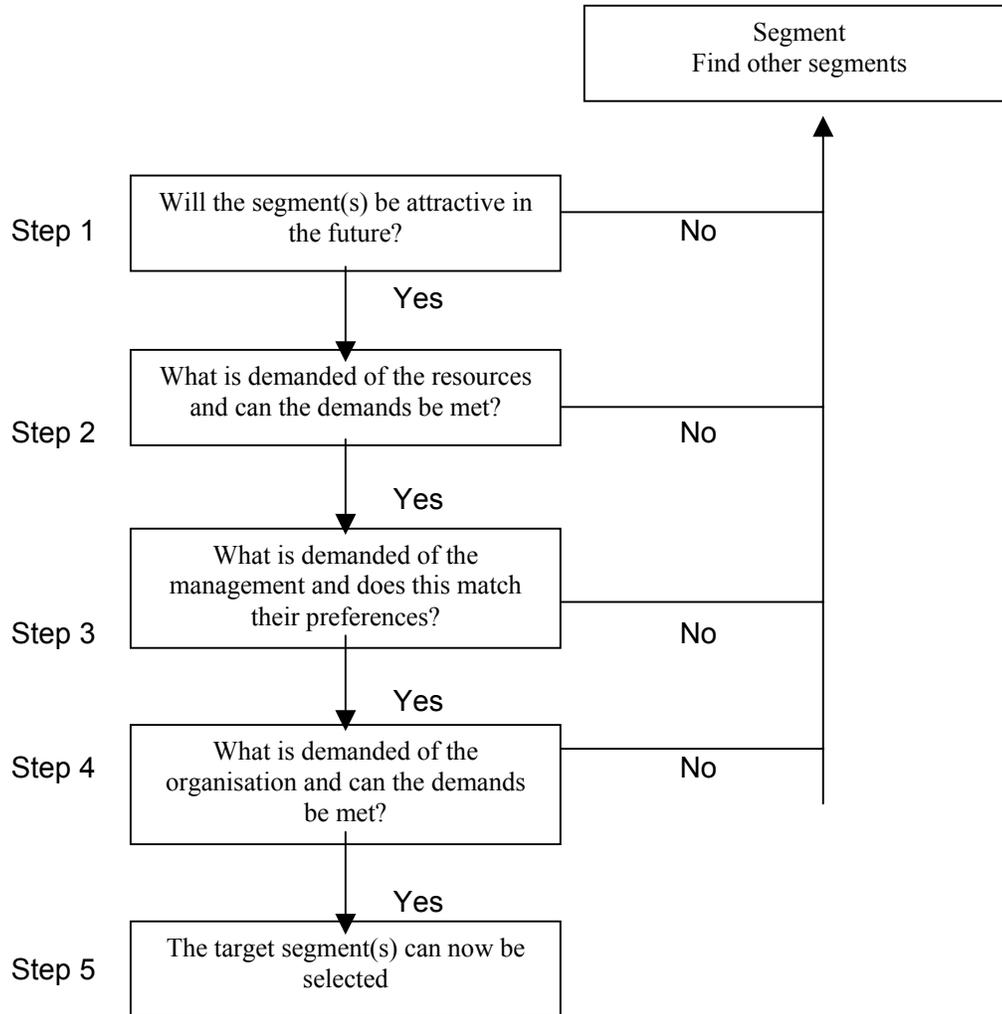
## Segmentation by DMU structure



Source: Shapiro and Bonoma, 1984

**Figure 2**

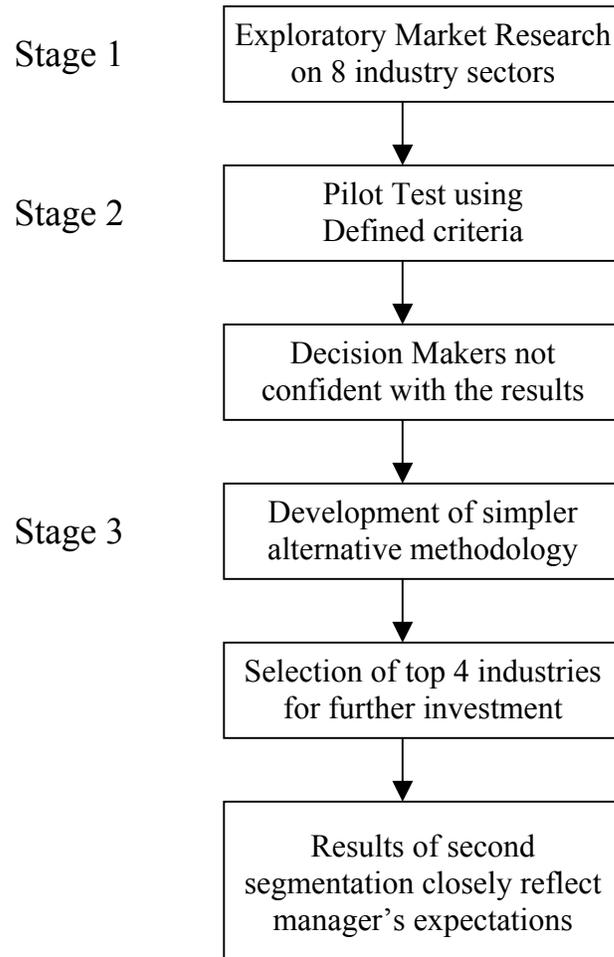
**A Segmentation Selection Process**



Source: Freytag and Clarke, 2001

**Figure 3**

**The Decision Phases**



**Figure 4**  
**The Decision Matrix**

