



Corporate strategy development via numerical situation analysis

Corporate
strategy
development

Alan Davies and Elwyn John
Cardiff University, Cardiff, UK, and

Andrew Thomas

Glamorgan Business School, University of Glamorgan, Pontypridd, UK

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Abstract

Purpose – Using the numerical situation analysis (NSA) technique in the development of corporate strategy provides senior managers with a suitable methodology for the creation of alternative strategic options. Subsequently, it may be used to evaluate those options for possible selection and implementation by the company concerned. In addition, the technique provides a graphic temporal point description of an organisation's strategic situation. Consequently, the aim of this paper is to outline the technique of NSA via a hypothetical example and thereby illustrate its use in practice.

Design/methodology/approach – By using a paradigm approach, the paper indicates the correct application of the NSA technique as a means of defining and evaluating alternative strategic options within a manufacturing company. As proposed, the methodology also permits several graphic illustrations of the strategic situation to be drawn, along with a scheme for monitoring the effectiveness of an adopted strategy.

Findings – The evolution of the suggested NSA technique and its application to the formulation of strategic options for a manufacturing company are outlined in the paper. In practice, its application in four differing industries has resulted in some caveats regarding its use, and to some provisional conclusions being drawn in respect of its usefulness to senior management. These are recorded in the concluding section of the paper.

Research limitations/implications – The design, development and application of NSA proposed in this paper together with the experience of its implementation and use, in practice, highlight a potentially useful extension to existing methods of strategy formulation. The methodology offers senior management a technique, whereby alternative strategic options may be defined and evaluated for possible adoption along with diagrammatic illustrations of an organisation's strategic situation. In addition, the approach allows a selected strategy to be monitored over time for effectiveness, thus providing an early warning mechanism in respect of strategic inutility.

Originality/value – The paper contributes to the existing knowledge based on strategy development, evaluation and selection. It also provides a mechanism for monitoring a selected strategy for effectiveness over time and a structured framework for senior management to undertake the strategic planning process. It may when used in practice achieve an improved level of strategic understanding on the part of senior management and thereby stimulate improved corporate performance.

Keywords Strategic planning, Performance management, Strategic evaluation, Organizational performance, SWOT analysis

Paper type Conceptual paper



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Introduction

It has long been recognised that the formulation of an effective company strategy is one of the most difficult tasks a management team has to undertake. Accordingly, in most companies who adopt the “planning school” approach to strategy development (Mintzberg *et al.*, 1998), a considerable analysis of the firm’s current situation and its future prospects is usually undertaken during the strategic planning process. This is done so that accurate and pertinent facts along with identified options are presented to senior management decision makers in an ordered and logical way, prior to the adoption of, or modification to, corporate strategy. As part of this planning procedure; a strength, weakness, opportunity and threat (SWOT) analysis is normally compiled for the perusal of senior management and as an aid for strategic decision making and benchmarking current capabilities against industry accepted levels of performance and operating methods/practices. However, as currently applied, although the qualitative SWOT analysis does help in the formulation of strategy and in the listing of alternative options via its TOWS extension (Wehrich, 1982), the process does require some experience, imagination and mental agility to undertake successfully. TOWS analysis is a variant of the classic business tool, SWOT analysis. TOWS and SWOT are acronyms for different arrangements of the words strengths, weaknesses, opportunities and threats.

The technique of numerical situation analysis (NSA; Davies *et al.*, 2007), an extension of which is outlined in this paper, has as its objective the development of and enhancement to the basic SWOT/TOWS procedure to provide a company’s senior management team with a mechanism for improving their situational awareness and hence strategy formulation. In effect, NSA sharpens the executive team’s focus on the company’s strategic position and thereby provides a smoother translation from the examination of factors affecting a firm’s situation and prospects, to the formulation and selection of an effective business policy. Therefore, the NSA concept is useful for true benchmarking practices in that it involves identifying the correct combination of key strategic business levers that enable a company to gain competitive advantage which in turn allows it to adapt their business practices to achieve success. The case study shown later in this text provides a clear process of showing how the company was able to identify its strategic SWOT elements and then use the analysis to drive strategic change for gaining competitive advantage. In the paper that follows, the extended technique of NSA is outlined, together with an illustrative example of its application in practice. Pertinent conclusions are drawn from the application presented to explain the value of the technique in practice, together with additional comments unearthed via the qualified use of NSA in actual case studies.

SWOT analysis is one of the most widely applied strategic management tools in use in business today and an essential component in the development of any company’s strategic business plan. Although the technique explicitly links internal company strengths and weaknesses to external market opportunities and threats in the business environment, it has been reported that it can be somewhat difficult without expert help to incorporate into an effective strategic planning process (Slack and Lewis, 2002). As a business technique however, SWOT/TOWS analysis has proved to be both popular and very useful, in that it provides the senior management of a company with a starting point and a focus for strategy formulation in any given set of circumstances (Ahmed *et al.*, 2006). The technique initially provides a qualitative assessment of a company’s internal strengths and weaknesses at any particular point in time and can be integrated into

an appropriate benchmarking methodology aimed at establishing current capabilities and measuring against suitable standards (Kumar *et al.*, 2006). These factors may then be used either to exploit the identified current or future market opportunities or to combat if possible coincident or predicted external threats. In addition, action can be taken by the senior management team to further improve the strengths of the firm and to try if possible to eliminate any of the organisations perceived weaknesses.

Originally developed from research conducted at the Stanford Research Institute, a SWOT analysis is usually conducted as part of the initial strategy formulation process, often in conjunction with and following a political, economic, social, technological and legal (PESTL/SLEPT) analysis of the company and its business environment (Dyson, 2007). In its simplest form, the technique consists of listing a firm's perceived current and anticipated future competitive strengths and weaknesses, together with its available market opportunities and likely business threats. These four lists which should be restricted to the most important factors only, are then arranged in matrix form such as that shown in Figure 1 to allow for creative discussion within a company's senior management team, and the subsequent production of four sets of possible alternative strategies (Wehrich, 1982). The technique is qualitative and generic in that it can be applied with variations to all sizes of single or multiple-unit businesses irrespective of industry and can via its enhancement ensure that the management team considers growth, consolidation, divestment and retrenchment strategies for the organisation to which it is applied (Dyson, 2007).

One variation of the basic qualitative technique is to use weighted factor assessment to assist the management team in deciding factor importance, and thereby to help in crystallizing strategy formulation (Wheelan and Hunger, 1995). This translation, from the lists of current and future internal and external factors to the development of strategic options and final strategy selection, is the vital and most difficult step to achieve in the SWOT/TOWS analysis. Creative discussion within the management

Internal Company	Strengths	Weaknesses
External Market Factors	1. R+D Capability	1. Poor Cash Flow
	2. Quality Product	2. Weak Product Outlets
	3. Good Craftspeople	3. Workforce Capabilities
	4. SOTA Manufacturing Processes	4. Untapped Global Penetration
	5. Motivated Staff	5. Lack of Strategic Focus
Opportunities	SO Strategies	WO Strategies
1. USA	S1, S2, O2 Weighted	W2, O2 Weighted
2. Local Sub-Contract		
3. EU		
4. Specialist Sub-Contract		
5. Gov't Support		
5. Gov't Support	S1, O4 Unweighted	W2, O4 Unweighted
Threats	ST Strategies	WT Strategies
1. Saturated Markets	S1, T4 Weighted	W2, T4 Weighted
2. Strong Competition		
3. Product Innovation		
4. New Players		
5. Retailer Leverage		
5. Retailer Leverage	S1, T4 Unweighted	W2, T4 Unweighted

Figure 1.
SWOT factor listing

team plus the use of weighted factor assessment can assist in making this translation by sharpening the executive team's focus on the essential issues. This is also true of NSA and it is the intention of this paper to show that NSA can produce an even sharper focus by extending the numerical aspect of traditional SWOT/TOWS analysis. The paper also indicates how the results of a NSA exercise conducted in a example company and presented in diagrammatical form, improves the situational awareness of senior company managers and provides additional help in the successful formulation and selection of an effective company strategy.

Numerical situation analysis

As outlined above, the technique of NSA is an extension and further development of the strengths, weaknesses, opportunities and threats approach to strategy formulation. In effect NSA takes the basic qualitative approach of SWOT/TOWS and by introducing a numerical element to the methodology, turns it into a quantitative tool for strategy formulation and selection. As mentioned above, the initial aspects of quantification for the SWOT/TOWS analysis that of weighted factor assessment has already been proposed by Wheelan and Hunger (1995) in their classic text on strategic management. However, this approach relies on factor weights and assessments being allocated via informed opinion only and without the use of a pair-wise comparison to rank factor importance. This is corrected in NSA, which builds on the Wheelan and Hunger technique in several significant ways. First, via the use of pair-wise factor comparison to rank the SWOT/TOWS factors by their importance and second, by the utilisation of SWOT/TOWS factor ratios, to provide company management with additional insights to and awareness of various aspects of the firm's situation.

A further feature of NSA is the adoption of SWOT/TOWS factor ranking and assessment to allow two dimensional situation mapping. By using cross-product factor values to link the individual SWOT/TOWS factors, the technique can also permit the visualisation of a three dimensional "strategic field". In addition, another advantage of NSA is that the technique can easily be incorporated into a spreadsheet model. This permits the possibility of sensitivity analysis being used on the various strategic factors involved, plus the time dynamic simulation modelling and assessment of potential company strategies for efficacy over a given time horizon. The technique in this sense is fairly straightforward and may be more suited to small and medium sized enterprises (SMEs) who do not have the resources or capabilities to employ more sophisticated methods such as strategic management dynamics (Warren, 2008). In order to illustrate the methodology involved in using NSA the next section of this paper describes the NSA approach adopted by a small manufacturing company. It outlines the changes made in its organisational structure and its strategic operational approach in order to achieve economic sustainability.

A single company case study approach is adopted in this paper. The reason for adopting such an approach is that it allows for a closer and more detailed observation of the developmental life cycle of the company. Such case study observations are well suited to relatively new research topics, especially where the phenomena are poorly understood and characterised (McCarthy *et al.*, 2006).

Example scenario

An example of how the technique can be used in practice is shown in the short case study provided in this section. The example company is a small manufacturing

organisation which has suffered from a number of internal and external issues over the years. Whilst the company could identify a number of clear opportunities for market growth, internal restrictions and a lack of strategic focus have prevented the company from taking swift action to capture market share of its products. The following case study outlines its issues.

The financial fortunes of TT Ltd have fluctuated significantly since its original inception. Over the past eight years the company has been brought to the edge of insolvency and has seen significant changes in its management structure and manufacturing operations to revive its fortunes and set it on its way to becoming a successful and economically sustainable business.

TT Ltd is a community business manufacturing musical instruments for a predominantly UK market. Following a very promising market survey which identified a clear opportunity to capture a significant slice of the market in this area, suitable investment was found which enabled TT Ltd to be set up and trade. A location on a brown-field site and a major investment in “state of the art machinery” gave the company an opportunity to produce their proposed product range quickly and effectively. It also created sufficient capacity for the company to produce both new and existing products thus enabling the company to protect its market position and to move ahead of the competition.

The company’s management structure was set up in a traditional format. A board of directors was established consisting of stakeholders with a vested interest in making the company work. The board recruited a managing director and a team of manufacturing and sales experts. The managing director had been recruited on the basis of his background as a leading management specialist with a particular reputation in running a tight and well-structured organisation. Over the ensuing months the managing director developed systems and procedures which were aimed at reducing the effects of uncertainty in the production system and to provide clarity, order and vision within the company. A high degree of financial control was exerted upon the organisation with investments in machinery and equipment being highly scrutinised for their viability and tightly managed during installation, commissioning and operation.

On the shop floor, operations were monitored and managed with a high degree of control. The adoption of scientific management principles saw a series of measuring instruments and consistency strategies implemented which were aimed at achieving very tight control over material movements and the work of the shop floor personnel. For example, work breakdown structures were created, standard production times devised and structured build plans developed with shop floor personnel being expected to work to these rigid mechanisms without any deviation from the norm.

However, some two years after its inception, the company was in serious financial trouble. The market share they expected to capture had not materialised and there were significant problems with introducing new products into the market. Product quality was poor and production output was erratic and low.

Faced with almost certain insolvency the company agreed to the authors of this paper to undertake a detailed analysis and benchmarking of the company’s strategy, business and manufacturing processes. The analysis included a thorough characterisation of the activities within the company and detailed interviews (using the structured interview technique (SIT)) with all the personnel within the organisation. The perspectives of each member of staff within the company was captured and later analysed with a view to

especially when objective performance, marketing or business environmental data was unavailable. Accordingly, where there was the absence of objective data, these values were generated by facilitators using either the SIT advocated by Targett (1996, pp. 81-87), for subjective probability knowledge acquisition, or by the team-based consensus (TBC) method proposed by Buchholz and Roth (Buchholz and Roth, 1987; Harnett, 2011).

Objective data was obtained for the SWOT factors such as: product quality (scrap levels and customer return data); cash flow (profit and loss data); market saturation (sales figures and market analysis data); market opportunities (in some cases from market analysis data).

Where objective data was no able to be obtained, the SIT and TBC methods were employed. SIT was employed to obtain data for the issues relating to; R + D capability, manufacturing process technology platforms and product innovation levels. SIT was best suited here because detailed information needed to be obtained from the technology and production manager in the company and so a consensus based approach could not be undertaken due to there being only one expert in the company who had this information. The TBC method was employed to obtain the remaining elements and their subsequent ranked order. In this instance, the TBC method worked well because the authors needed to obtain a consensus from as wide a range of people in the company since issues such as; staff motivation, workforce capabilities and untapped global penetration etc would be best analysed by a range of experts from within the company. In this instance, the data obtained by the consensus oriented decision making (CODM) approach of which further information can be obtained from Harnett (2011).

Once all the factors had been obtained, the TBC method was used in order to establish a ranking for each factor within SWOT. This process was critical since the ranked order to the factors had a bearing on the subsequent numerical analysis. Therefore, the team allocated up to two days to ensure the ranked order was agreed with everyone in the company.

An alternative that may also be used to set these values and ranked order is of course the Delphi technique (Targett, 1996, pp. 362-368). It is important to note at this point that as with any application of the Delphi technique, it is not necessary to gather together all or any of the participants in the process of obtaining the basic information for an NSA analysis, although such a gathering is not specifically precluded by the methodology if it is felt to be beneficial to the data acquisition process. Indeed, although remote information gathering via letter post, telephone or electronic mail may be preferable in order to reduce cost, subjectivity or game playing to a minimum, there was considerable benefit in this case study to conduct such data acquisition and subsequent analysis in a collaborative format. In this instance, the Delphi technique was not employed since the author felt that the cohesive nature of the team enabled them to extract the information and data quickly and effectively. However, the authors were cognisant of the need to employ such a technique when dealing with large companies with multiple distributed sites.

Once the pair-wise factor comparisons were made and the CFAs allocated, the total current factor percentage values in each category were found. These were then be used to calculate the various factor category ratios that are shown in Figure 2. As is seen from this table, with careful interpretation the factor ratios offered a considerable insight into the perceived company situation. In this example, the strength to weakness ratio is 1.16, which indicates that the company is not particularly strong relative to its known weaknesses.

The strength to opportunity ratio is also 1.2 and this shows that the company is not in a strong position to take advantage of the opportunities which exist in the marketplace. For the example company, the strength to threat ratio is reasonable at 1.2 indicating that the company can defend itself to some extent against its current perceived threats.

In the case of the weakness to opportunity ratio, it is in balance at 1.05, which again indicates that the company is unable to take full advantage of its perceived market opportunities. This is reinforced by considering the weakness to threat ratio of 1.05 and the 1.00 value which occurs for the opportunity to threat ratio. It should be noted that care must be taken in interpreting these ratios and in relating them to the company's overall circumstances when attempting to clarify the firm's position. At this point, the situation diagrams shown in Figures 3-5 were drawn to assist the management team in visualising the firm's position. The factor profiles in Figure 3 showing those strengths and opportunities that may be incorporated into high gain strategies, along with those threats and weaknesses that must be guarded against or offset. In this representation as the relative factor value (RFV) drops so does the potential strategic gain.

In Figure 4 the firm's current position on the improvement path is indicated by plotting its current factor values on each side of the "strategic square" and linking these as shown by the solid lines. At the crossover point, a line is then drawn at right angles to the diagonal improvement path, intersecting it at the company's current situation point.

The firm's future position can be found via a management of objectives approach, that is by estimating or setting the factor assessment values or targets at a given time horizon and plotting the company's position in the same way as above. In Figure 4, the suggested strategic direction which the company needs to take is shown by the green triangle with the direction of travel being towards the apex of the triangle. It is also fairly obvious that the reverse could be the case in respect of the actual company position, and hence the need to monitor and plot the firm's location on a regular basis, as movement to the right and downwards would indicate a failure of the company's adopted strategy. NSA as represented in Figure 4 thus provides the senior management team with a time dynamic technique for the assessment and visualisation of a company's strategic performance.

A variation of this type of visual representation is shown in Figure 5 wherein the firm's strategic position is represented within the "strategic square" by a trapezoid. This geometrical shape is formed by joining the total CFA values on the four sides of the square and can be interpreted in the following way. The ideal strategic position of the company would be if it were represented by the upper triangle in Figure 5.

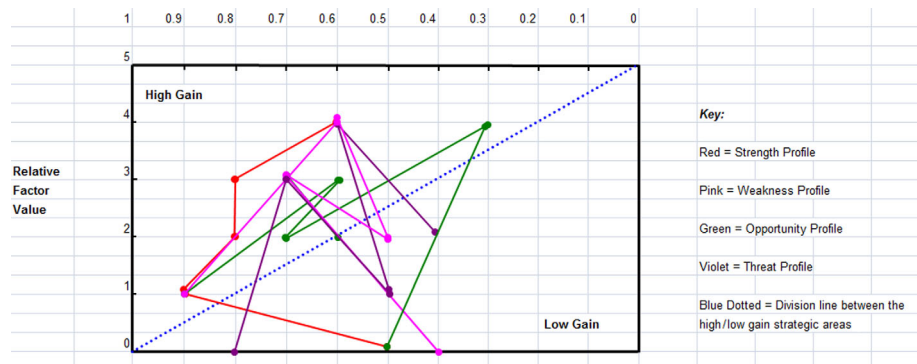


Figure 3.
Company situation
map indicating current
factor profiles

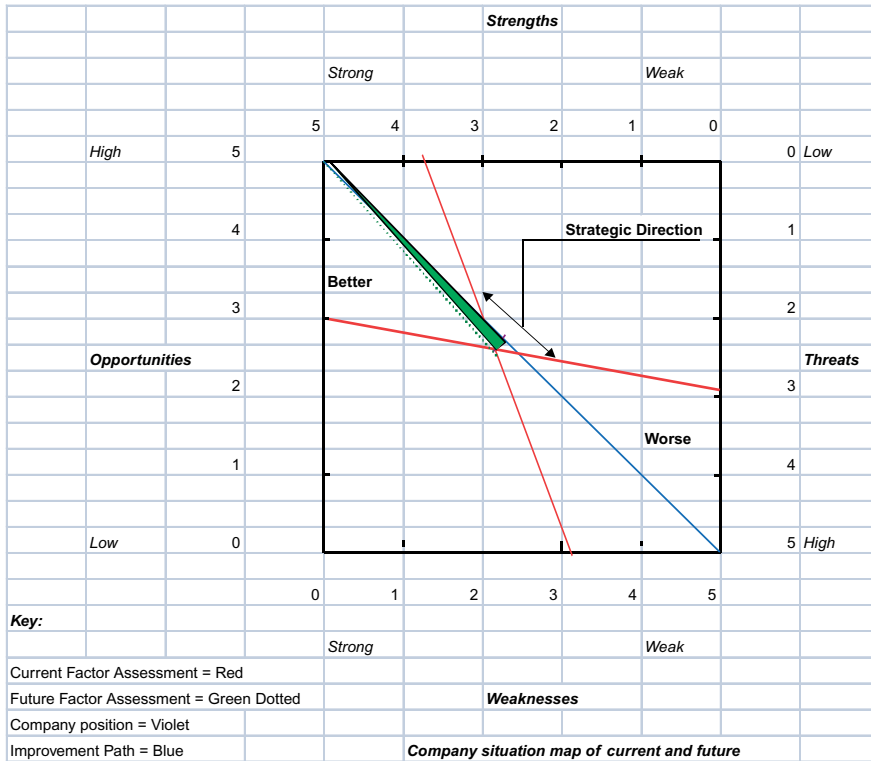


Figure 4.
The company position within the strategic square

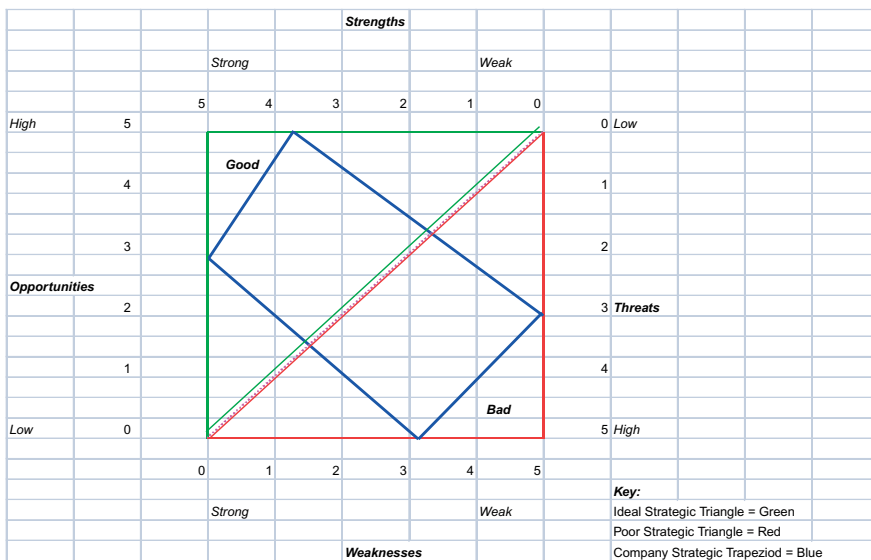


Figure 5.
The strategic square

was seen as an area which would achieve immediate and highly beneficial effects by opening new markets and protecting the company's revenue stream. Initially the company felt that new product development would concentrate upon extending its current product range. However, following a critical survey of the marketplace and after obtaining the opinion of the company's sales force who were critical in developing the company's future strategic direction through developing key market intelligence for the company (Trim and Lee, 2008) it was decided to identify the company's core strengths, competencies and capabilities and if possible try to match these factors to a wider customer base. Following a further analysis of the company's strengths and opportunities, the authors suggested that the company restructure its operations by forming a new company to operate alongside TT Ltd This would allow the newly created company to orientate itself around a process focus and would complement the product focus currently shown by TT Ltd By capitalising on their reputation for good product quality and excellence in R + D, the company was confident of penetrating new markets and increasing revenue.

The development of a new company would allow the same workforce to be employed by both companies each utilising the labour when required and thereby reducing the overall labour costs. Also, as both companies operated from the same premises, operating costs could be split between the companies depending upon their individual contribution to these costs. Another important reason for developing a new company to operate alongside TT Ltd was to reduce the risk of company failure.

Consequently, TT precision was formed. The company developed its own web site and actively marketed itself as a precision engineering company capable of manufacturing a variety of high quality products for a range of industries. The subsequent development of an E-manufacturing capability enabled the company to have a global presence.

As originally conceived, the primary aim for the existence of TL precision was to act as a revenue generator for TTL. In practice, this meant that the level of activity which TT precision was involved in was closely linked to the level of revenue which TT Ltd was producing. Low revenue generation at TT Ltd triggered increased sub-contracting activity at TT precision and vice versa to ensure no under utilisation of capacity or resources took place. This policy enabled the workforce to be spread effectively between the two companies and varied the work they were undertaking, thus increasing the workers level of enthusiasm and interest in the success of the total company.

Strategically, TTL precision aimed at operating in high value revenue streams and have developed a good reputation in returning good quality products in short lead times. In all, the introduction of TT precision into the existing TT Ltd's manufacturing facility enabled the overall company to increase its revenue by capitalising on the newly developed worker capabilities, sense of responsibility and purpose.

Results and conclusions

The technique of NSA as outlined above can provide a useful methodology whereby the current SWOT/TOWS analysis may be enhanced and extended to give more focus and insight to a company's strategic situation. It also assists the management team in a company, to interpret the firm's strategic position and to achieve the translation from the mere compilation of factor lists to the formulation, development and selection of an effective business strategy. In addition, the technique offers a method of mapping strategic profiles, monitoring the devised strategies for efficacy, and modelling strategic

situation factors. However, experience has shown that great care is required when applying the technique in practice. Key to the whole exercise is the data acquisition process and the confidence with which the information acquired is viewed by senior management. Within reasonable limits, the data must reflect a sensible representation of the firm's strategic position and future prospects at the time of analysis. Whilst the case study shown in this paper provides an example of the application of NSA, a wider survey of its effectiveness in a number of different types of organisation would be beneficial to understanding its true capabilities in different settings and environments.

Therefore, a further three industrial case studies have been undertaken using the NSA technique in firms which range from a large company which is a market leader in its field to a small niche market organisation. The industries involved were materials manufacturing, instrument making (case study company), electrical component manufacture and organic domestic product production. Some generic conclusions were drawn by the authors from the experience of facilitating these NSA case studies and these are outlined as follows. The executives in all the companies examined seem to be somewhat intimidated by the process of eliciting the knowledge required as input for the technique. This was in the sense of being "put on the spot" to provide such, as they saw it, precise data. Arguably this may have been the fault of the facilitation process itself, although this was very gently done via the use of an explanatory talk, pro-forma documents and structured interviewing conducted on a one to one basis in private to minimise any stress. Surprisingly, of the managers consulted for this study, (despite a number of them holding senior positions within their companies), few had been exposed to formal methods relating to considering and analysing the strategic position of their company. Many who were consulted considered this aspect of company policy as the province of the most senior manager on site and did not fully appreciate how their activities and decisions might affect the strategic performance of the firm. In most cases the managers adopted *ad hoc* methods of strategic management often managing using short planning horizons and applying reactive management approaches.

As a consequence of the above, several executives across the complete range of companies examined, confused both internal and external strategic factors, appearing to focus almost exclusively on internal company problems. Few had a clear working knowledge of their firm's competitors aside from their company names, and certainly little detailed information about their competitors operations or strategic objectives. The fact that any strategic objective has to be realistic and achievable within a given time frame, bearing in mind the resources available to the company, was not fully appreciated by several of the executives interviewed. They tended to confuse tactical internal company targets with strategic objectives and ignored in some cases time and resource considerations in their assessments. The majority of the executives involved appreciated undertaking the NSA exercise, and although many thought it a complicated process best done by consultants or a dedicated strategic planning team, several thought it clarified their firm's strategic position, most especially via the diagrammatic representations. In addition, several also thought the exercise useful in raising their own strategic awareness and appreciation of the importance of their actions within the overall company business policy.

The NSA technique proved to be a useful tool to the main case company in being able to establish for the first time, their strategic issues in a collective and collaborative environment. It is true to say that the company members learnt a significant amount

from this experience through being able to collectively define the vision of the company and to agree on a set of key SWOT factors that were later used to set the strategic direction of the company. However, like with all techniques that are “strategic” in nature, significant guidance and support in being able to ensure that the factors were suitably strategic in nature in order to provide the correct impetus to the company to move along its strategic axis was needed. Also, through applying a “numeric” approach to mostly subjective data is not without its problems and practitioners of the NSA technique need to ensure that the “numbers” do not drive the thinking and the innovation in this process. Therefore, practitioners need to ensure that they “sense-check” the data with their own understanding of the system and process so that a combined qualitative/quantitative approach towards strategy development and deployment is achieved.

The experience of using NSA in practice has thrown up many interesting lines of enquiry in respect of the technique and its implementation. Of particular interest is its further extension into three dimensional mapping of the strategic field, strategic factor probability and sensitivity analysis. Trend analysis applied to strategy implementation and the consequent company positioning over a given time horizon is another aspect worth consideration, together with methods of improving the use of NSA in practice and improvements to the facilitation process.

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About the authors

Alan Davies is a Lecturer in strategic and operations management at the School of Engineering, Cardiff University. He entered academia having followed an industrial career in systems engineering. His main research interests include strategic and operations management, manufacturing and maintenance systems, design of industrial operations, processes and systems.

Elwyn John is a former Lecturer in operations management at the School of Engineering, Cardiff University. He entered academia having followed an industrial career in production engineering. His main research interests include facilities layout, graph theory, manufacturing systems, design of operations, processes and systems.

Andrew Thomas is a Professor of international operations and supply chain management at the University of Glamorgan and a Visiting Professor of the University of Wales. He entered academia having followed an industrial career in production engineering. His main research interests include manufacturing systems design/analysis and maintenance management. Andrew Thomas is the corresponding author and can be contacted at: athomas1@glam.ac.uk

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