A number of marketing related and/or corporate planning models exist in the academic/business literature. Some are extremely academic. However, a high proportion are both practical and relevant to marketing managers and can be used to provide the company with a competitive advantage. A comprehensive model can, therefore, assist the marketing manager to make better decisions. Management science aids marketing decision-making in the sense that models can guide research into solving various problems by identifying areas in which information is needed. Provided the model has been both validated and has been accepted by the marketing manager’s colleagues, it should facilitate corporate strategy formulation and provide a strategic marketing focus. Modelling is an important part of a marketer’s arsenal owing to the fact that the environment in which marketers operate is undergoing constant change and some of the forces that impact an organisation are by their nature unpredictable and can have devastating results. The past twenty years has witnessed a proliferation of marketing and marketing related models. Some models have been designed to study micro or market specific factors and these have been documented in the academic marketing journals. The implementation of a marketing model is not always as straightforward as one would expect and there are clearly defined reasons as to why this is the case. Some marketing models have appeared over complex and have been disregarded by practising marketers as they have appeared impractical and to a certain extent too mathematical. This is not to suggest that the product life cycle of marketing models has reached the decline stage, in fact marketing models appear in different forms and one could suggest have only just entered the growth phase of their life cycle. Management scientists have and will continue, to make, a useful contribution to modelling, but the time would appear right for a more conceptual approach to be taken, if that is a wider audience is to show an interest in marketing models per se. Several authors have shown that organisation specific models and indeed industry specific models do have a role to play, especially from the point of view of strategic choice and counteracting strategic drift. It is the author’s premise that strategic marketing models will be of interest to both the academic community and the business community in the near future, and the organisational appraisal model outlined in this paper should stimulate discussion about the relevance of the modelling process and how to construct user friendly, strategic marketing models. The deployment of industry specific strategic marketing models is fact and this implies that marketers need to further their knowledge about the subject matter if they are to benefit fully from the body of knowledge that is in existence. A number of marketing models will be referred to

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and reference will be made to developing a strategic marketing model that hopefully will stimulate further discussion about the subject of strategic marketing. One could say that the classical marketing approach is now redundant as it does not take into account adequately the internal and external factors that marketers need to deal with on a day to day and month to month basis. Marketers are and will continue to play a more significant role within an organisation, therefore, it is essential that they possess a number of skills which allow them to effectively manage across functions. Marketers are in an excellent position to understand the changing needs of the customer base and how best the organisation can function bearing in mind that competition is becoming more and more intense. The organisation appraisal model outlined herewith will provide marketers with a strategic marketing focus and bring about increased commitment which should allow the organisation to outperform the competition in the complex and rapidly changing world of business.

**Introduction**

The decision-maker receives information from a variety of sources and having appraised its usefulness either independently or with his/her colleagues produces a decision. It is useful for us to reflect for a moment and consider what constitutes a decision. Little (1970, p. B-467) has suggested that a "decision" is:

"... usually a murky event, identifiable only in retrospect".

It is important to note that the quality of decision-making, not only rests with the ability of the decision-maker and his/her colleagues, but can in fact be improved by the decision-maker(s) having access to better information upon which to make a judgement and/or by improving the process by which the decision-maker(s) deal with existing information (Gorry, 1971, p.1).

A marketing model can be used by the marketing manager and should allow the decision-maker(s) to make better decisions and further, allow for greater confidence in decision-making, especially when it comes to implementing a solution (McIntyre, 1982, p.17). Little (1970) has suggested that implementation represents a major problem in the sense that the manager/model interface may be out of phase, but the major consideration seems to be the content required. It is a fact that a large number of decisions, are non-routine and usually require that people, ideas, data and necessary judgements from diverse sources need to be brought together (Little, 1970, p. B-466). As a consequence, data is prolific but usually inadequately digested, often irrelevant and some key issues lack the illumination of measurement.

The organisational appraisal model outlined in this paper was constructed using matrix algebra and validated using a structured questionnaire administered during a personal interview. The author was able to gain access to both a small and a large robotics company in order to interview senior marketing staff and thus validate the model.

**Model Definitions**

A model can be used as a basis for investigating the behaviour of a real system. It has been suggested that a model is (Hull et al., 1976, p.3):

"... any representation of the system under consideration. A map of a town, a scale model of a
new building, a financial balance sheet and a mathematical equation are all examples of models. If the model includes all the relevant features of the system then the behaviour of the model can be used to predict the behaviour of the system. This means that the operational researcher need not experiment with the real world; he can instead experiment with a model of the real world".

An iconic model is a physical representation of certain characteristics of the real system (Hull et al., 1976, p.7). Photographs, statues and scale models are representations of such models. This type of model is limited, however, it must be borne in mind that iconic models are not necessarily comprehensive in the sense that many of the important characteristics of a business system, such as cash flows and flows of information, for example, do not have a physical representation.

Analogue models allow for certain aspects of the behaviour of the real system to be reproduced in a different medium (Hull et al., 1976, p.8). Graphical models, a breakeven chart, for example, is in fact a particular type of analogue model.

Mathematical models are extremely useful, they allow for the relationships between the variables in the system to be represented algebraically (Hull et al., 1976, pp. 8-10).

Aaker and Weinberg (1975, p.17) have defined a model as being:

"... a representation or abstraction of a real-world system. Being an abstraction, it is a less-than-perfect reflection of the real world, but it is much easier to manipulate and work with than its real-world counterpart. The model builder continually has to counter-balance model completeness (and thus validity) with simplicity (and thus usability)".

Little (1979, p.16) stipulates that a model is:

"... a mathematical description of how something works."

Boulden and Buffa (1970, p.66) have written that modelling is:

"... the process of taking tangible organisational inter-relationships and translating them symbolically into a ‘logic’ which is expressed by a set of algebraic equations".

Once the model designer and/or builder has a clear idea of what a model is going to be used for, he/she can proceed to study a given situation and model it accordingly. The more comprehensive a model is, the more successful it is likely to be, and this should result in it being accepted as a decision-making tool for interpreting business situations.

Criticism Attributed to Past Management Models

It has been suggested that managers sometimes reject the idea of using management science tools owing to the fact that they do not possess sufficient time (many decisions need to be made and
implemented almost immediately for example)(Grayson, 1973, p.43). Obviously, because of the technical exigencies of the modelling process the user of the model has sometimes found it difficult to interpret the results of models in a meaningful manner (Bender et al., 1981, p. 164). Further, the data required to be input into the model has in many instances been non-existent and as a result has had to be gathered from scratch, this has often required that a management information system be established, hence, additional expense has been encountered and this has brought extra managerial problems per se (McIntyre, 1982, p.17).

A number of marketing models developed by management scientists have in the past failed to aid the marketing manager in both allowing him/her to make better decisions and enthuse greater confidence in making these decisions (McIntyre, 1982, p.17). It could be that management scientists have in the past, attempted to improve decisions by applying a model framework that does not take decision-makers' explicitly into account but instead attempts to operate independently of them. Both the model structure and its parameters are derived from sources other than the manager who is, of course, confronted with the problem to solve.

Management scientists have in the past attempted to solve a problem according to their view and then attempted to convince the marketing manager that the solution is appropriate. Conversely, when the problem has indeed been adequately structured and the necessary data has been readily available, marketing models have been widely implemented and have proved satisfactory (McIntyre, 1982, p.17).

Management scientists have, in fact, been criticised severely over the years for their approach to problem structuring/solving. Grayson (1973, p.43) had this to say on the subject two decades ago:

"Most management scientists are still thinking, writing and operating in a world, that is far removed from the real world in which most managers operate (and in which I personally have been operating). They often describe and structure non-existent management problems, tackle relatively minor problems with overkill tools, omit real variables from messy problems, and build elegant models comprehensible to only their colleagues. And when managers seem confused or dissatisfied with the results of their activities and reject them, these scientists seem almost to take satisfaction in this confirmation of the crudity and inelegance of the managerial world."

It has been suggested that operational research should be subject to strict management controls, for example, these controls must ensure firstly, that operational research is directed towards the right area of the business and secondly, that it is indeed cost-effective (Hull et al., 1976, p. 1). This implies that in order that the controls introduced are effective, the manager exercising the controls possesses adequate knowledge of the operational research activity.

The Modelling of Marketing Phenomena

The modelling of marketing phenomena should be considered from two
perspectives (Montgomery and Weinberg, 1973, p. 18): firstly, a scientific thrust that leads to a greater understanding of marketing phenomena, one is thinking specifically of developing either descriptive or normative models which advance knowledge and secondly, a managerial thrust whereby management science aids marketing decision-making. Descriptive models are developed either to predict or to help provide an understanding of a process, it could be for example that such a model is used to evaluate several decision alternatives, if this is the case, then it becomes a decision model (Aaker and Weinberg, 1975, p. 17). A descriptive model involves constructs and relationships between constructs. There are three types of constructs. First, there are input constructs, these may be under the control of the decision-maker (advertising expenditures for example), or they may be uncontrollable (the advertising expenditures of competitors for example). Second, output constructs, sales or profits for example, are the model outputs of interest to the user. Third, intervening constructs are evident, one is thinking specifically of such factors as the attitude of customers for example.

The model structure would of course warrant the determination of the relationship between constructs at three levels of specificity (Aaker and Weinberg, 1975, pp. 17-18): first, one must identify the link between the constructs, for example, it could be said that advertising expenditure generates positive consumer attitudes and hence, sales increase over time; second, the functional form of this relationship must be established, whether it is linear or nonlinear, immediate or lagged or additive or multiplicable for example, and third; there is the need to estimate the parameters of the functional relationship.

It is interesting to note that when descriptive models are used to evaluate a number of alternative values of controllable input constructs they then become decision models. A search procedure is required to establish the various decision alternatives under consideration. These procedures can be either informal based searches, determined by the decision-makers own judgement or formal mechanistic search procedures, data-based models, that are built into the model (Aaker and Weinberg, 1975, p.18).

A distinction can be made between (i) deterministic models, that is, one assumes that the values of all variables are either known exactly or can be predicted exactly and (ii) probabilistic models, the latter accepts that the values of some variables are uncertain and deals with this, using concepts from probability theory (Hull et al., 1976, pp. 11-12). The main disadvantage associated with probabilistic models is that considerable amounts of data are required in order that each probability distribution can be established.

The decision-maker has, over a period of time, assimilated relevant information about constructs, the causal relationships and the parameter estimates. Aaker and Weinberg (1975, p.18) stipulate that:

"One of the misconceptions about models is that they must be based primarily or exclusively on large amounts of hard data ... Yet, many successful models do, in fact, rely extensively on "soft" information that reflects the knowledge of decision-makers themselves."

Although a model may be constructed purely for descriptive purposes, it is
important to note that managers need models that help them to solve a particular problem they are confronted with. Once the model has been constructed and indeed, validated, the model builder next has to ensure that the model can be manipulated in order that a solution can be arrived at to the original problem.

A key selling point could be that the modelling process takes into account the organisation's culture and as such provides management with a marketing focus. Romer and Van Doren (1993, p.178) are of the opinion that high-technology companies are managed by technocrats who, owing to the uncertainty associated with markets, shy away from a marketing orientation. This point has been given some credence by Meldrum and Millman (1991, p.44) who are of the opinion that:

"Although marketing is many things, one of the important components is using models and approaches that allow managers to make sense of their business and to bring some discipline into their thinking and planning."

One should remember that small manufacturers do face a long-term strategic challenge in the sense that they do not have the resources to attract the most qualified marketing personnel (Weinrauch et al., 1991, p.255). This can inhibit the modelling process within a company and this lack of expertise can in itself be classified as a weakness.

Advantages of Models to Marketing Managers

Management science aids marketing decision-making in a number of ways (Aaker and Weinberg, 1975, pp.18-21; Montgomery and Weinberg, 1973, pp.39-41): first, models act as information summaries, it is noticeable, for example, that a single interpretable output construct summarises a mass of both subjective and objective input data. The various constructs and relationships can organise information and provide a common vocabulary for discussing complex issues. Second, models can guide research into solving various problems by identifying areas in which information is needed and to which the model output is sensitive. Third, models can help the manager to make a more appropriate decision. Fourth, models can be sufficiently sophisticated and, therefore, assist managers in their operational needs. Fifth, models can cover a broad range of activities, and they can, therefore, be useful to managers in many different ways. Sixth, models can be custom designed for the organisation and the particular management problem. Seventh, once the model has been established, the manager and the management scientist must work together in order that the model is to be implemented effectively - hence, adequate communication and an understanding of the problem(s) to be solved and the method of problem solving will be arrived at. Eighth, and finally, the decision-maker will both use and develop a commitment to the model and this will result in a higher quality of model building and a greater probability of organisation acceptance.

Constructing a Model

A poor model, that is, one that is either inadequate or inaccurate in representing the business environment for example, will not, therefore, assist the manager to solve a problem in the most appropriate way owing to the fact that the model does not allow the manager to fully understand the environment, therefore, his/her ability to
make the most appropriate planning and control decisions is limited (Gorry, 1971, pp.3 and 12).

A model should be designed first and then the formal data needs arrived at, this should ensure that the manager understands the model - he/she understands the building blocks, their functions and their structural connections and further, he/she will be aware of the assumptions and the simplifications made (Gorry, 1971, pp.3 and 11). One must assume, therefore, that the model will be designed for the manager and tailored to meet his/her needs (Little, 1970, p.B-483; and Sharp and Price, 1982, p.243). Model builders by adhering to this, guarantee that the manager's implicit model of a situation is formalised into an explicit model which is then used to evaluate alternative decisions, aid planning, decision-making and allows for a better understanding of the market (McIntyre, 1982, pp.17-18; Little, 1979, p.10; Chakravarti et al., 1979, p.251).

McIntyre (1982, p.21) outlines the fact that model builders and model users differ substantially in regard to cognitive style (how an individual favours using perception and judgement when making decisions) and/or their quantitative (mathematical) ability, hence, model builders should design the model so as it is most relevant to the users' abilities, perspectives and thinking styles.

The model builder must, however, establish the structure of the model according that is to the situation/problem being modelled, this requires that the model builder knows what information is required, must obtain it, though again, it may be possible to make better use of descriptive information as opposed to relying exclusively on statistics and formal data (McIntyre, 1982, pp.17-18; Thillainathan and Price, 1981, pp.264-269; Amstutz, 1970, p.90). Obviously, the model builder must make explicit the assumptions underlying the choice of factors, once this has been achieved, the model builder can establish whether it is feasible and advantageous to develop the model into a sophisticated computer model (Holloway, 1974, p.52).

Construction of the individual model equations is difficult (Sharp and Price, 1982, p.243). The degree to which parameters can be estimated in a model depend upon the variables for which there are measurements and the inter-relationships between system variables (Sharp and Price, 1982, p.244). The model should serve as a vehicle through which managers can both integrate more satisfactorily and use their existing knowledge of the market to the advantage of the company (McIntyre, 1982, p.18). Hence, the model should be considered an aid to decision-making and further, although the problems of testing the validity of a model are substantial, if it is judged to allow managers to make better decisions - measured from the stance of a direct monetary gain, it is valid (Lavington, 1970, p.26; Aaker and Weinberg, 1975, p.16).

Lilien et al., (1992) and Hanssens et al., (1990) have made a valid contribution to the subject matter and have done much to explain the complexity of marketing models and modelling marketing phenomena. Such texts are useful information aids to potential modellers and are extremely valuable from the perspective of promoting marketing models.

A Number of Useful Marketing Related and/or Corporate Planning Models

A number of marketing related and/or
corporate planning models exist in the academic/business literature. A number tend to be extremely academic, though a high proportion are practical and relevant to management decision-makers. The Boston Consulting Group (1972) growth-share matrix allows senior managers to assign strategic roles to individual products in the company's portfolio of products and this has been well documented. The work of A.T. Kearney (Hofer and Schendel, 1978, p.192); the ADL model (Webster, 1979, pp.262-263) and the Shell Directional Policy Matrix (Robinson et al., 1978, p.13) have all made a contribution to strategic management and have provided the marketer with a central platform with respect to making a valid contribution to the strategic direction of the business.

Kotler (1979, pp.657-682) has provided a schematic outline of how one can build a corporate - marketing model designed for developing and evaluating alternative marketing plans. The model is computerised, industry-specific, data-based and comprehensive. Kotler (1979, pp.666-667) has suggested that a comprehensive marketing system model should contain a number of key factors, for example: as regards the environment, one should consider those forces that effect the demand for the company's product(s); other relevant model factors include the state of the economy and customers' attitudes; the company's and the competitors' marketing decision models; the major categories of decision-making in the market-product, characteristics, price, sales force, physical distribution and service, and advertising and sales promotion for example; the marketing channels the company uses for the products(s); the buyer behaviour model that shows customer response to the activities of the manufacturer, and the distribution channels and finally, total industry sales, market share and costs. Top management will, of course, require information relating to the relative sales volume, profit volume, expected growth in sales, expected growth in profits and the degree of control and adaptability of each channel.

It goes without saying that management must list the decision inputs, those relating to both short - and long-range goals (target sales growth, return on sales, return on investment and market share for example), the desired outputs, bearing in mind key environmental factors; the assumptions upon which the model is based; the functional relationships between various key elements and the development of a mathematical model The model next has to be programmed for the computer and made available to management, one assumes that the model is/has been tested for validity.

Schendal and Patton (1978, pp. 1,612-1,613) have stipulated that corporate strategy decision makers must give adequate attention, firstly, to the controllable variables and secondly, to the non-controllable variables. As regards the controllable variables, these must be considered from the perspective of strategic and/or operational variables that are concerned with the long-run resource allocations that determine the basic direction of the firm (product/market choices, the relative emphasis given to each, functional area strategies used within each product/market area, the major operating policies to be used, and the administrative structure for example). Obviously, decisions made in these areas determine the degree to which the firm adapts to the threats and opportunities of the environment and achieves its goals.

Non-controllable variables, as indeed the term implies, are outside the control of management even though the decision
made may influence them, for example, one is thinking about the environment specific to competition in a given industry and those factors describing the broader economic, technological, political and social dimensions that effect industries in general.

Schendel and Patton (1978, pp.1,613-1,621) developed a simultaneous equation model of corporate strategy and performance and estimated the model for a sample of US firms. The authors were able to identify key relationships between multiple dimensions of performance, managerially controllable variables and non-controllable variables describing the external environment. The simultaneous nature of multiple performance objectives was demonstrated and trade-offs between the objectives were found. Modelling transformed management's perception of relationships between the resources at its disposal, constraints forming the competitive environment, and organisational goals and objectives, and transformed them into explicit form, identifying the direction; magnitude and significance in the relationships.

It is necessary to review the work of Naylor and Schauland (1976, pp.927-937) in some detail, their research reveals a number of points that should be borne in mind by model builders/users. The authors identified over 2,000 corporations world-wide (56 per cent of which were based in the US, 12 per cent in Canada and 5 per cent in Europe) using and developing a corporate planning model (73 per cent of the firms that participated in this research came into this category) or planning to develop some form of corporate planning model (15 per cent of the firms appeared in this category). Eighty per cent of the firms using corporate planning models had modelled the financial structure of their business whilst only 41 per cent of the firms possessed some form of marketing model and further, the majority of corporate models were deployed by manufacturing firms and 59 per cent of these firms had annual sales in excess of US $500 million.

It would seem that corporate simulation models are used more frequently in order to evaluate alternative policies, to provide financial projections, to facilitate long-term planning, to aid decision-making and to facilitate short-term planning, hence, the main users of these models tend to be the President and the Financial Executives, whilst the Vice President of Marketing appears to be one of the least users (Naylor and Schauland, 1976, pp.928-929, and 931). It is interesting to note that the frequency with which the models are used was found to vary from several times a day to annually (it is interesting to note that 45 per cent of the corporate models in use appear to be annual models); 67 per cent of the models were developed in-house, 24 per cent were developed in-house with the assistance of outside consultants and 8 per cent were purchased from an outside vendor; the average amount of effort required to develop models in-house without the assistance of outside consultants was 18 man months, the average cost of these models was US $82,752 whereas those models developed in-house with the help of outside consultants took on average 10 months to develop and cost on average US $29,225 (Naylor and Schauland, 1976, pp.931-932).

In terms of computer hardware, 42 per cent of the models were run in-house on computing equipment, 37 per cent were run on outside time sharing bureau facilities; 94 per cent of the corporate models are 'deterministic models', that is, they do not include any random or probabilistic variables; simulation was

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used as opposed to optimisation; the number of equations in the models varied from 20 to several thousand, the average number of equations in the models appears to be in excess of 500; 36 per cent of the models consisted of a set of causally ordered (recursive) equations linked together over time and it appears that less complex forecasting techniques like simple growth rates, linear time trends, and moving averages are used more extensively than adaptive forecasting and Box-Jenkins techniques, however, exponential smoothing and non-linear time trends are also used (Naylor and Schauland, 1976, pp.932-933).

The benefits provided by this type of corporate computer model include: the ability to explore more alternatives, better quality decision-making, more effective planning, better understanding of the business, faster decision-making, more timely information, more accurate forecasts and cost savings; whilst the limitations of the models include that they are not flexible enough, inadequately documented, require too much input data, take too long to develop, the running costs are too high, the initial development cost proved excessive and model users cannot understand model development (Naylor and Schauland, 1976, pp.933-934). The authors make the point that it is crucial to the success of any corporate planning model to have both the participation and the commitment of top management from problem definition through to policy implementation, in fact, a positive aspect that comes to light is that it appears that 60 per cent of top management within companies that deploy corporate models were "somewhat interested" whilst a further 30 per cent appeared "very interested" (Naylor and Schauland, 1976, pp.928-929, and 935).

As regards which department is responsible for the development of the company's corporate model(s), we are informed that corporate planning accounts for 27 per cent, finance 16 per cent, operational research 15 per cent, management science 12 per cent and other 30 per cent (Naylor and Schauland, 1976, p.935). It is important to conclude by saying that top management is looking to computer simulation models to evaluate the impact of alternative policies, opportunities, and external events on the performance of the entire corporation bearing in mind the degree of risk and the uncertainty prevailing in the business environment.

Sharma and Achabal (1982, pp.107-112) outlined how STEMCOM (STEering Marketing COntrol Model) was developed in order that executives could monitor the performance of the company's marketing strategies, departments and products for example. The model was designed in order that it would provide management with an integrated and analytical procedure that would assist in bringing the actual performance of the company as close as possible to target objectives. Sharma and Achabal (1982, pp.105-106) outline 6 key steps that should be followed when designing a marketing control model. First, the marketing manager must both understand and document the objectives that are to be achieved. Second, given the objectives to be achieved and adequate information relating to relevant environmental variables (the stage of the economy and the nature of competition for example), a strategic marketing plan is next formulated. Once established, the strategic marketing plan is then implemented. Third, the manager must decide upon the relevant attributes or dimensions that affect the company's performance and their corresponding indicators and predictors. Fourth, owing to the fact that the various indicators will
be interrelated and each measures some aspect of performance, it is beneficial to combine the indicators into a composite performance index. Fifth, the manager should be able to compare the performance index to some target index in order to determine if the performance is consistent with the objectives set by management. If the performance index does not deviate significantly from the target index or alternatively if the performance indices for consecutive time periods do not exhibit any trend, the performance is considered to be under control. If indeed, the performance index does deviate significantly from the target index, the manager must establish the reason for this. Sixth and finally, the manager must be able to invoke corrective action.

As regards the work of Sharma and Achabal (1982, pp.108-112), it is worth noting that: first, only 12 indicators were used to measure the performance across the departments; second, models such as STEMCOM can either be updated monthly or quarterly as opposed to annually; third, the choice of the performance indicators were not based on theory but on the executives judgement and experience; fourth, each model developed in-house is distinct and may not be applicable to other organisations owing, that is, to a variety of factors-differences in business philosophy, management objectives, relevant attributes and the rule used to form a composite index and fifthly, the model must be calibrated periodically owing to the fact that significant performance indicators may change over time.

The competitive bidding model is useful, it is a decision model which relies on management judgement and entails an underlying response relationship based on a limited number of inputs about competitive and customer behaviour (Montgomery and Weinberg, 1973, p.23). The model is simple and can improve management decision-making by following a sequence of tests, the model solution versus the manager’s unaided solution to the seven bidding problems.

Montgomery and Weinberg (1973, pp.21-31) outlined a laboratory experiment involving ninety-six MBA students at Stanford University who tested the validity of a model entitled ‘CALLPLAN’, which was to be used by brand managers, the objective being to maximise cumulative profit over nine simulated decision episodes, bearing in mind that a fixed promotional budget had to be utilised in a number of stipulated marketing territories. The research conducted established the fact that specified decision calculus models do aid decision-making.

Porter (1985) has made a significant contribution to management thinking and is one of the most quoted management academics; his earlier work which expounded the five competitive forces provided a theoretical grounding for the three generic forces concept that has been given much coverage and a strategic management course has little credibility if it does not incorporate the value chain concept. Porter (Vernon-Wortzel and Wortzel, 1990) has developed his ideas further and has made a useful contribution to our understanding of international competition as seen from an industry perspective. Indeed, some authors who have tested Porter’s theoretical concepts have been impressed to find that they do have credibility (Miller and Dess, 1993). Miller and Dess (1993, p.553) are keen to point-out that a model should firstly, simplify the complex; secondly, maintain accuracy (predict and explore relationships); thirdly, possess generalizability to a number of settings; and fourthly, should have the ability to generate follow-up research.
Patterson (1993) has postulated a basic model of first movership which takes into account a first mover strategy, competitive advantage and the presence of strategic barriers; it is also industry specific. This work is closely related to that of Schreuder (1993) who has studied management changes and postulated that successful companies pay attention to timing and the nature of strategic measures in times of industry crisis.

Moorthy (1993) has addressed theoretical modelling in marketing and most importantly has indicated how modelling is related to research paradigms (behavioural marketing and decision support modelling). Moorthy (1993, p.97) has stipulated that a supermodel:

"..is a framework for interpreting the implications of models."

Moorthy (1993, p.97) makes a valid point when suggesting that a supermodel is constantly changing/evolving as a model designer's understanding evolves. McCabe and Narayanan (1991, p.351) state that:

"...no single planning technique can serve all businesses in all contexts."

Okoroafo (1991) has also made a useful contribution to the subject from the perspective of market entry, by focusing attention on two perspectives: the level of risk involved and incremental versus nonincremental mode.

Organisational Acceptance of the Model

There is a consensus of opinion in the academic/business literature suggesting that if a model is to be used to influence both policy and strategy development, the necessary political support must be provided by top management (Sharp and Price, 1982, p.244; Naylor and Schauland, 1976, pp.928-929; and Boulden and Buffa, 1970, p.83). Aaker and Weinburg (1975, p.22) have stipulated that:

"The acceptance of a model by an organisation is influenced, if not determined, by a perception of its value in a cost/benefit sense. This value will be enhanced as the quality of the models emerging from the model-building process improves."

Nahavandi and Malekzadeh (1993, pp.411-414) have put forward an integrative model/framework for studying the relationship between the leader (role of leadership style) and strategy formulation and implementation. Shiner (1988, pp.28-29) has outlined marketing's role in strategy formulation and Aaker (1992) has provided marketers' with a useful insight into how to adopt a strategic marketing stance. Hence these authors have done much to invoke a strategic marketing orientation as opposed to a classical marketing orientation.

Organisational Appraisal Model for Marketing Managers

A model must be of value to key decision-makers within an organisation and it is the author's contention that the model should be industry specific. It is not possible for one individual to have a complete understanding of the industry in which the organisation functions, therefore, by undertaking an extensive literature search the model designer/builder can develop an understanding of how competitive advantage is arrived at. A literature search can be used to identify the main marketing oriented characteristics of a hypothetical
company in the industry and armed with this information a model can be built incorporating these characteristics and their relationship to the roles of key personnel (Trim, 1985, 2). A model can be designed which depicts in an abstract manner, amenable to relatively simple analysis, how a company should function. The objective of the exercise should be stated, for example, it could be (Trim, 1985, p.3):

"to produce an organisational appraisal model, or if necessary a limited number of models, applicable to robotics companies, bearing in mind their marketing perspective and the commitment of top management, treating as inputs the influence of key personnel and as outputs the marketing oriented characteristics of the hypothetical robotics company."

The model(s) developed will be complex owing to the fact that the interaction between key personnel (major influencers) has to be modelled. The ultimate objective is to produce a number of policy recommendations that would when implemented benefit the robotics company. If an academic stance is being taken, it might be a sound idea to produce two models, one representing a large hypothetical robotics company and one being representative of a small hypothetical robotics company. The argument behind this is that the formal structure of a large company, and most of the academic and management literature relates to large companies, is not applicable to a small company, the latter being represented by an informal structure.

The stages in the research would be as follows (Trim, 1985, pp.4-5):

Stage one
Literature search; the identification of the reference sources (secondary data) to be used by the model builder.

Stage two
Literature survey; utilisation of the reference sources and the extraction of the desired information.

Stage three
Model construction; construction of the organisational appraisal model applicable to robotic companies.

Stage four
Questionnaire design and development; design and development of the questionnaire to be used for collecting the primary information relevant to model validation.

Stage five
Primary data collection; field interviews with key marketing personnel connected with robotics companies.

Stage six
Validation of the model; investigating the match between the model(s) developed from the secondary data and the information collected from the personal interviews, and testing the hypotheses.

Stage seven (a)
The model being valid; application of the model in order to establish strategic marketing policy recommendations that would when implemented benefit the robotic companies. Or,

Stage seven (b)
Should the model prove invalid, refinement of the model; modification of the questionnaire and the collection of further primary information in order that the model can be amended and classified as valid.

An interesting point to note is that a market model usually looks at historic data over a three-year timeframe and statistical
methods are used to construct the marketing model (Marketing, 1994, p.30). The benefit of this approach is that the model can be based on hard data and assist management to meet the marketing objectives set.

The organisational appraisal model can be represented by a number of matrices and appears in Diagram 1. Diagrams 2 and 3 portray the relationship between the major influencers and the influences and the characteristics. The major influencers were (Trim, 1985, pp.346-347): the Chief Executive Officer; top management; strategic planners; strategic planning managers; the strategy manager; corporate planners; organisationalists; management; marketing management; the marketing manager; the marketing development manager; the marketing research manager; marketing researchers; and the new product development marketing manager. The main influences associated with the influencers were established, and the influences were listed in the form of a checklist associated with each influencer. A number of marketing oriented characteristics were identified by an analysis of the influences possessed by the major influencers. An influence tree diagram was designed for a large hypothetical robotics company and the missing influences were incorporated. This meant that an outline now existed of the perceived influence linkages within a large hypothetical robotics company, and the influences could be related to the marketing oriented characteristics of a large hypothetical robotics company. A set of weightings were next developed for the influencers and the importance and role of senior marketers became apparent. Matrix algebra was used to mathematically model the company; it was viewed as a transformation of the influences in order to produce the characteristics. All the matrices developed and those resulting from the validation process (staff from V. S. Remek and Cincinnati Milacron) are featured in Exhibit 1. There were seventy-five marketing oriented characteristics (outputs), which were translated into marketing policy.

CONCLUSION

There is no doubt whatsoever that marketing related and/or corporate planning models are of use to marketing managers from a variety of industries. It is important to note that in the past a number of marketing models have been developed by management scientists, however, these have not always helped marketing managers to make better decisions. Provided that the problem to be researched has been adequately defined, model development is both constructive and successful, and there is a formal information system in being, the marketing decision-making process should facilitate corporate strategy formulation.

It goes without saying, that model development can be both time consuming and expensive. The construction of the individual model equations requires mathematical expertise of a high standard, constraints such as this should not prove inhibitive, because descriptive models can become decision models; the advantages outweigh the disadvantages and the modelling process should ensure that the company adopts a strategic marketing perspective and hence develops a competitive advantage.
LEGEND

The interaction matrix models the interaction between the influencers in order to produce the influences.

The characteristic transformation matrix established the relationship between the influences and the characteristics.
The company function matrix depicts the relationship between the influencers and the influences.

The characteristic transformation matrix established the relationship between the influences and the characteristics.

The characteristic matrix denotes the contribution of each major influencer on a characteristic by characteristic basis.
Notes on the Above Matrices

The weighting matrices $W^L$, $W^S$, $W^R$ and $W^CM$ indicate the relative importance of the influences.

The connection matrices $C^L$, $C^S$, $C^R$ and $C^CM$ depict how each influence is related to each individual characteristic. The characteristic transformation matrices $H^L = C^L W^L$, $H^S = C^S W^S$, $H^R = C^R W^R$ and $H^CM = C^CM W^CM$ established the relationship between the influences and the characteristics. The interaction matrices $P^L = C^L W^L$, $P^S = C^S W^S$, $P^R = C^R W^R$ and $P^CM = C^CM W^CM$ model the interaction between the influencers in order to produce the influences.

The connection matrices $C^2L$, $C^2S$, $C^2R$ and $C^2CM$ depict the relationship that exists between each major influencer and each influence.

The weighting matrices $W^2L$, $W^2S$, $W^2R$ and $W^2CM$ show the relative importance of each major influencer.

The company function matrices $C^L W^L$, $C^S W^S$, $C^R W^R$ and $C^CM W^CM$ depict the relationship between the influencers and the influences.

The influencer element matrices $X$, $U$, $V$ and $S$ depict each major influencer. The characteristic matrices $Y = H^L W^L$, $Y = H^S W^S$, $Y = H^R W^R$ and $Y = H^CM W^CM$ denote the contribution of each major influencer on a characteristic by characteristic basis.

The Z values for the large hypothetical robotics company, the small hypothetical robotics company, V.S. Remek and Cincinnati Milacron, Industrial Robot Division denote the total contribution of each major influencer.

The characteristic matrices $Y^R = H^R W^R$, $Y^CM = H^CM W^CM$ denote the contribution of each major influencer on a characteristic by characteristic basis. The connection modifier matrices $C^L$ and $C^2L$ depict the relationship between the influences in the small hypothetical robotics company and the influences for V.S. Remek and the relationship between the influences in the large hypothetical robotics company and the influences for Cincinnati Milacron, Industrial Robot Division. The company function matrices for V.S. Remek $P^R$ and for Cincinnati Milacron, Industrial Robot Division $P^CM$ depict the relationship between the influencers and the influences. The characteristic modifier transformation matrices $H^R W^R$ and $H^CM W^CM$ depict the relationship between the amended (adjusted) influences and the characteristics. The new Z values for V.S. Remek and for Cincinnati Milacron, Industrial Robot Division denote the amended (adjusted) total contribution of each major influencer.
REFERENCES


589.


