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An assessment of various approaches for evaluating project strategic benefits

Recommending the strategic index

Frank Lefley

School of Management, Royal Holloway, University of London,
Egham, Surrey, UK

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Abstract Capital projects can be complex and offer strategic benefits that are difficult to quantify in financial terms and, as a result, are often left out of the appraisal process altogether. This paper highlights the inadequacy of the financial appraisal models to capture many of these strategic benefits, and reviews various approaches and strategic models currently used in practice. It argues the case for the adoption of a management team approach, focusing on judgmental values, to the identification and evaluation of a project's strategic benefits. The paper concludes by looking at the strategic index (SI) which was developed to identify and evaluate project strategic benefits. The procedure to arrive at the SI has been designed to extract "accurate" judgmental values and to formalise, in a structured way, what would otherwise be an unstructured and complex problem, linking project selection to business strategy. This procedure, to some extent, adopts a "systems thinking" type of process of inquiry, making use of experience-based knowledge.

1. Introduction

Capital projects are often complex and offer not only financial benefits but also benefits of a strategic nature. Such strategic benefits are, in some cases, difficult to quantify in financial terms and, as a result, are invariably left out of the project evaluation altogether. Projects that have a negative NPV, but have strategic benefits are, in some cases, being accepted on faith and intuition alone. A review of some strategic models used by practitioners' highlights a need for a new pragmatic approach to the identification and evaluation of strategic benefits arising from capital investments – linking project strategic benefits with business strategy. The strategic index (SI), which is a sub-model of the financial appraisal profile (FAP) model, developed by the author (Lefley, 2000, 2004), is put forward as such a pragmatic model that has general application.

The practical advantages of the SI model are that it creates, through a type of soft/hard systems approach, an awareness of strategic issues that affect the organisation as a whole. It not only forces corporate management to formulate both a corporate and business strategy, whereby key strategic benefits looked for in each capital project are identified, but provides a practical system of communication between various levels of management, so that these benefits can be evaluated in a systematic manner. Further, practical implications of using the SI model are that

- (1) it helps to integrate business strategy into the investment appraisal procedure; and



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- (2) it encourages greater managerial involvement and commitment to project selection.

The structured, pragmatic approach of the model also makes it ideally suitable to be adapted to a software tool, making it practical in application. It also has wide international implications in linking project strategy to both divisional and corporate strategy.

Evidence suggests that the financial appraisal methods used by industry to evaluate capital investments may be inappropriate *on their own* for today's high technology business environment, since they fail to capture many of the strategic benefits from such important projects (Drury and Tayles, 1995; Lefley and Sarkis, 1997; Naik and Chakravarty, 1992). Azzone *et al.* (1993) argue that traditional methods of evaluating strategic investments in new product development are inadequate, but there is no "dominant" substitute. Mohanty and Deshmukh (1998) argue that, "These models actually fail to incorporate multitude of factors involved in the justification of investment decisions". They also support the view that the inability of such models to adequately consider intangible benefits makes them fundamentally deficient for most strategic decision-making. Arguments have been raised since the traditional capital budgeting techniques assume incremental adjustments to a status quo system, strategic investments defy quantification in the traditional capital investment evaluation approach (Proctor and Canada, 1992). While the traditional financial appraisal techniques may have been adequate for appraising cost reduction and standard equipment replacement investments, they may be inadequate in appraising the more strategic projects now being considered by management.

Managers' are placed in a dilemma in that, on the one hand, they wish to invest in projects that may have high strategic implications, but, on the other hand, they find it difficult to justify the capital expenditure for such projects using the traditional financial appraisal techniques. The conventional financial evaluation models are well established, well-documented, while the methodologies for the evaluation of the strategic elements of an investment decision are less formalised and less understood. There is without doubt a need for a broader approach to the appraisal of capital projects, one that consider not only the financial aspects of an investment decision but also the strategic nature of each investment.

While "corporate" strategy is concerned with what business the organisation is in, "business" strategy is aimed at a lower strategic level and concerns itself with the way in which the organisation will survive and compete in the business it is in. Much of the literature regarding these two strategic levels is concerned with the formulation of strategy – the determination of a strategic plan(s) (Aaker, 2001; Sokol, 1992). What we are concerned with is the identification and valuation of strategic benefits that arise out of an investment in a capital project.

A project becomes strategic because it offers the potential to extend the corporate life of an organisation by replacing the dead cells: a process of continuing change (Lefley, 1996). It is from the strategic benefits that invariably the so-called *competitive advantages* are derived (Lefley, 1997). Aaker (2001) argues that sustainable competitive advantages are crucial to long-term business success.

2. A review of some of the common strategic models of investment appraisal used by managers

A number of strategic models of investment appraisal have been developed, many of which are in response to a perceived lack of effectiveness of the conventional financial models. Although many of the strategic models have been developed with new technology projects specifically in mind, we would argue that the strategic concepts are equally applicable to all major projects. We would strongly support the argument made by Mohanty and Deshmukh (1998) that the decision-making process has become more strategic as a result of "the accelerating change in the environment of contemporary organisation".

Many of the earlier strategic models attempt to convert strategic benefits into monetary (or monetary equivalent) values (Airey and Young, 1983; Kakati and Dhar, 1991; Kaplan, 1986; Meredith and Suresh, 1986; Samuels *et al.*, 1995). Possibly, an exception to this is the Bromwich and Bhimani's (1991) model, which classifies and scores the benefits from investments in advanced manufacturing technology into three categories:

- (1) those that can be directly quantified in financial terms (precise financial values);
- (2) those that can be converted to less precise financial values; and
- (3) those that defy financial quantification.

The scores for each classification are totalled and a weight (determined by management) is applied to each total to arrive at a combined score value which gives an overall view of the project. Through the "weighting" process of the three elements categorised, it may still give greater importance to the financial issues of an investment decision. It also assumes that each individual "score" value is of equal importance: it is only the various categories that are weighted and not the individual benefits or strategic factors appertaining to each project. We would argue that strategic benefits have varying levels of "importance" to an organisation, and that while their levels of "existence" may vary with each project, their levels of "importance" will, in the medium-term, remain constant.

Samuels *et al.* (1995) also adopt a "points" system, but only to top-up the financial appraisal if two or more projects are being evaluated and only one can be accepted. They argue that if a project meets the NPV criteria (having quantified, in financial terms, only the tangible benefits) then with the intangible benefits there should be no doubt of the project's viability. On the other hand, if the NPV (again, having considered only the tangible benefits) is negative, then a points score is assigned to each of the intangible benefits and management must then decide if these benefits outweigh the deficit in the NPV. In the case of their model, they argue that it would be invalid to add up the strategic score points to arrive at a total score for each project – it is therefore, the points structure that is important and will indicate that one project is superior to the other. While they argue that the point scores cannot be directly converted into financial values, they do accept that there will be an inevitable financial trade-off. This approach is similar to that of Bromwich (1970) and Kaplan (1986), who also advocate a "financial top-up" justification methodology.

In Kaplan's model, if the discounted net cash flows from a project produce a negative NPV, then it becomes necessary to estimate how much the annual cash flows must increase before the investment does give a positive NPV. If the intangible benefits

are valued by management to be greater than this shortfall, then the project would meet the justification criteria for acceptance, otherwise, it would be sensible for management to reject the project. Kaplan's model revolves around the "financial appraisal" of capital investments by assessing the financial value from the strategic benefits of an investment opportunity to "top-up" the financial returns to such a level that the project can be accepted. Once acceptance has been reached, any further strategic benefits that may exist are ignored. If a project can be accepted on financial grounds alone then the strategic factors may not even be considered. In our opinion, it is important that all of the key strategic benefits from a project are identified and analysed, and that management are made aware of the full strategic implications with respect to each investment proposal.

Kaplan's approach is supported by Kakati and Dhar (1991) who also suggest a two level model (although specific to the justification of flexible manufacturing systems); first, the financial justification and then, if the project fails to meet the financial criteria, a strategic assessment is made. The main contribution of this model is the incorporation of strategic planning into the appraisal process and the treatment of intangible benefits from new technology projects.

The "points" or "score" approach to the valuation of strategic benefits is, in our opinion, a possible way forward, provided it is part of a multi-disciplinary approach (i.e. that key managers are involved in the scoring process).

We may classify some strategic models as "secondary-supportive models", where they give consideration to the financial issues first, and accept a project on this basis, or, if a project does not meet the financial acceptance criterion first time around, then a value/score is placed on the strategic factors, which is then used to support the financial justification. Such models see the strategic issues being of a secondary-supportive nature, because they are used to top-up the financial evaluation. Other models however, seem to infer that strategic factors are more important than financial factors, and that, possibly, a project should be accepted on strategic grounds even though it may not satisfy the financial criteria through a conventional financial appraisal of the project. If this is the case, then we may classify these models as "primary-supportive models", where considerations are given to the strategic issues first, and a project is accepted on this basis, overriding the financial evaluation. The strategic issues being of primary importance while the financial data act in a supportive role.

Although strategic models have been developed with varying degrees of sophistication, no single model has, however, been universally accepted and it is left to the decision-maker to adopt whichever approach they prefer, in much the same way as the many conventional financial appraisal techniques. It is therefore, essential that a "standard" approach be developed such that it can be universally applied to all major projects.

Strategic benefits are one aspect of a three-dimensional investment profile (financial, risk, and strategic) and deserve equal consideration to the financial and risk aspects. We would therefore, argue that what is required is a "primary-profile model" – one that treats strategic benefits from a project as a separate issue to financial appraisal and makes a serious attempt to evaluate them in some way, but does not seek to place spurious financial values on such benefits. A model that is systematic, analytical, dynamic, and, above all, produces a meaningful strategic profile

of an investment opportunity. The model should incorporate a systematic approach to the determination of key strategic benefits looked for in each capital investment (a function of corporate management). It should then identify the actual strategic benefits that arise from a particular investment (a function of the appraisal team). Such benefits should be analysed and a "value" is placed on them so that their respective importance is emphasised. The model should be adaptable, giving it a dynamic perspective, and it should also be pragmatic.

3. In support of a new strategic model

3.1 The strategic index

We recommend the use of our new model, the SI, which consists of a formal and structured analysis of a project's strategic benefits both from a corporate and functional management perspective. It has already been identified that projects become strategic because they offer some form of competitive advantage or the potential to extend the corporate life of an organisation. Strategic benefits, from the point of view of the SI, are therefore, those benefits that create a competitive advantage or contribute to corporate survival and which cannot be expressed adequately in financial terms. They therefore, differ from other benefits, which can be quantified in financial terms. The SI aims to identify and measure the "level of importance" of the strategic benefits for each project and provide support to the investment decision-making process.

The SI adopts a management team approach to arrive at project strategic score values (PSSVs) for each strategic benefit. By applying a corporate ranking (CR) to the PSSVs, a unique SI is then achieved. This ranking is required, as not all strategic benefits will have the same level of importance to the organisation. Here, we are not only concerned with the fact that a particular strategic benefit may exist in a project and the level of its existence, but also the "importance" to the organisation of that benefit. The CRs are represented by a value between 1 and 10 and may be calculated by using a pairwise approach. The SI is measured on a positive scale of 0 to 10, with 0 representing no strategic benefits, and 10 representing the highest strategic level.

It is essential that all projects are viewed from a corporate strategic viewpoint first, to see if they fit in with the overall corporate and business strategy of the organisation. If they do not, and are not legally or morally mandatory projects, they should be rejected outright. The corporate and detailed business strategy of an organisation must, however, be reviewed on a regular basis and should not be inflexible, but should be adaptable to take advantage of new situations and opportunities while still following some logical strategic plan. It is therefore, only those projects that, on preliminary investigation, are compatible with the corporate and business strategy of an organisation that will be considered in greater detail, and strategic benefits identified and evaluated.

3.2 The procedure for determining a project's SI

3.2.1 Stage one. This stage of the procedure is generally conducted by the highest level of management (corporate director level) – those responsible for the determination of the corporate and business strategy of the organisation. In small and some medium sized organisations, this corporate team may also act as the investment appraisal team, while in large organisations some of the corporate members may not be part of the actual investment appraisal team. Once this initial or preliminary part of the procedure is completed, it is not undertaken again until either, it has become apparent that

through an initial omission there is a need to undertake a revision of the exercise or there is a significant shift in corporate or business strategy (Figure 1).

First, key strategic benefits looked for in all investment projects are identified by corporate management and a CR of "10" is given to the most important benefit(s). All other key strategic benefits are then assessed against the CR of the "first" key strategic benefit by determining how *less* important they are to the organisation in relation to that benefit. The benefits are then assessed against each other, in order to determine a consistency of ranking – in other words, to make sure that the *laws of transitivity* have not been violated. This first stage of the procedure adopts a group discussion methodology, where corporate managers (directors) meet, exchange their views and come up with a group CR value for each of the key strategic benefits identified – a top team management (TMT) consensus approach. It is vital that corporate managers fully interact at this important stage in the procedure and arrive at a consensus in a manner similar to that which they adopt for all other key corporate decisions. Corporate management must present a unified front, with all members seen to be in full agreement.

For example (Table I), the corporate management of an organisation have identified five key strategic benefits (A, B, C, D, and E) looked for in each potential project. Benefit "B" is given a CR of 10 and "E" (which is seen to be equal to "B") is also given a ranking of 10. "A" is seen to be less than both "B" and "E" by a magnitude of 1, and is therefore, given a ranking of 9, and "C" is seen as having a significantly lower ranking than both "B" and "E" and is given a ranking of 6. "D" is given a ranking of 5, and is seen to be one point less than "C", four points less than "A", and five points less than both "B" or "E". In order to achieve a consistency of ranking, "C" has to be assessed to be of less value than "A" by a magnitude of 3 and "B" and "E" by a magnitude of 4 and greater value than "D" by a magnitude of 1. Although, in this example, the CRs have been expressed in terms of whole numbers, in practice, in order to consider small differences in the value of various strategic benefits, values may be calculated to one or more decimal places.

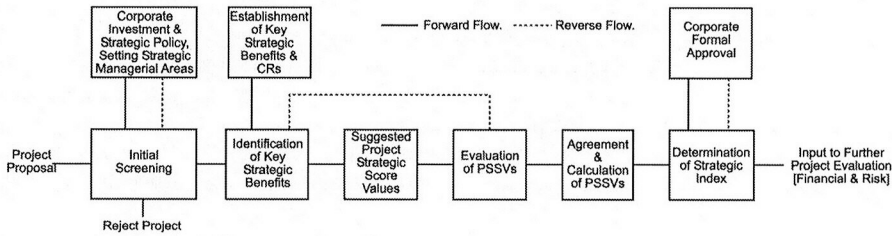


Figure 1. The strategic index

	A	B	C	D	E
A	1	9/10	9/6	9/5	9/10
B	10/9	1	10/6	2	1
C	6/9	6/10	1	6/5	6/10
D	5/9	2	5/6	1	2
E	10/9	1	10/6	2	1

Table I. Corporate ranking of key strategic benefits – pairwise comparisons

An alternative approach to the calculation of the CRs, especially where a large number of key strategic benefits are involved, is to use the pairwise matrix. Although the eigenvector method for calculating the required weights is preferred, using the “geometric average” of the entries in each row of the matrix is a good enough approximation. The “normalised weights” arrived at through this method can then be used to represent the CRs (Table II).

It may be appropriate to classify key strategic benefits to managerial areas of responsibility, so that an individual appraisal team member may be identified as being “associated” with that benefit. Such benefits may then be categorised into one of a number of “key strategic benefit areas”.

It is essential that the investment appraisal team are made fully aware of the corporate and business strategy of the organisation and that they are given precise details of the key strategic benefits looked for by corporate management. Any changes in the strategic direction of the organisation should be communicated to the investment appraisal team.

3.2.2 Stage two. This part of the procedure is conducted by the investment appraisal team, which is an essential part of the SI procedure. The investment appraisal team comprises key functional managers of the organisation together with an “independent” team facilitator (group leader). It is vital that the team facilitator is unbiased towards the project and can act impartially. The team facilitator must not be confused with a “project champion” who is a person heavily committed to a project and totally biased towards its acceptance.

While the composition of the investment appraisal team is important in respect to the members varied managerial disciplines, it is also essential to appreciate that their other demographic characteristics (basic social attributes such as age, sex, educational standard, length of service, etc.) may be equally important and may account for the fact that some teams will be more efficient than others. Also of importance is the level of managerial diversity in relation to the perceived environmental uncertainty – the degree to which managers differ in their perception of the uncertainty of their organisation’s external business environment (Simons *et al.*, 1999). It is therefore, the responsibility of the team facilitator to aim at maximising team efficiency based on their knowledge of the demographic characteristics of the team members.

Each member of the investment appraisal team (on receipt of the investment proposal document) is asked by the team facilitator to identify specific strategic benefits appertaining to the key strategic benefit areas, with respect to the project under review. This part of the procedure adopts a quasi-Delphi approach where each team member identifies strategic benefits without reference to any of the other

Key strategic benefits	A	B	C	D	E	Geometric mean	Normalised weights
A	1	0.9	1.5	1.8	0.9	$2.1870^{1/5} = 1.1694$	0.225
B	1.1111	1	1.6667	2	1	$3.7037^{1/5} = 1.2994$	0.25
C	0.6667	0.6	1	1.2	0.6	$0.2880^{1/5} = 0.7796$	0.15
D	0.5556	0.5	0.8333	1	0.5	$0.1157^{1/5} = 0.6496$	0.125
E	1.1111	1	1.6667	2	1	$3.7037^{1/5} = 1.2994$	0.25
						Total	5.1974
							1.0

Table II.
Corporate ranking of key
strategic benefits –
computation of
normalised weights

members – a degree of anonymity is required to give managers the freedom of expressing their own opinions without, at this stage, being directly influenced by other members. Details of the strategic benefits are then sent back by the team facilitator to all team members, but the “identifier” is not revealed. A number of Delphi probes may be made until the team facilitator is satisfied that as many as possible of the key strategic benefits, from the project under review, have been identified. This information is then collated by the team facilitator and categorised to conform with the *key strategic benefit areas* and sent back to each member of the team for them to give each key strategic benefit a PSSV on a scale of 0 to 10 (with “10” representing the highest strategic score). The PSSV represents the existence level, within a given project, of a particular strategic benefit – the higher the perceived level of existence, the greater is the score.

Once this has been done, the team facilitator informs all members of the score values arrived at, following which a meeting is held where members are asked to justify their own score values. While each manager will be “guided” by the more experienced functional manager regarding strategic benefits that may be specifically relevant to the functional manager’s area of responsibility, each manager will, however, have a personal view regarding each of these benefits. Once all the members of the appraisal team have commented on each benefit, the debate that then takes place will naturally influence a manager’s earlier view, allowing them to revise their score values if they wish so. At this stage, new strategic benefits may be included in the evaluation.

Debate is the spontaneous emergent task-focused discussion of differing perspectives and approaches to the task in hand, and includes the questioning or challenging of assumptions, reasoning, criteria, or sources of information, disagreement with direct and open presentation of rival recommendations. As the appraisal team is made up of members from diverse disciplines and with varied demographic characteristics, their views are likely to be different. It is therefore, important to use debate to examine and synthesise these differences if the team is to perform effectively (Simons, 1995). In the absence of debate, the team may not be able to draw on the diverse knowledge and experiences of its members (Simons *et al.*, 1999). The amount and intensity of the debate procedure will be moderated by the team facilitator to achieve maximum effectiveness.

While a team member may be influenced by the views expressed by other members, a member should not be coerced into revising their values. The procedure adopted together with the independent control of the team facilitator will reduce the possibility of “groupthink” (Janis, 1980) developing. This process of debate and re-evaluation (during which new strategic benefits may emerge) will continue until all views have been expressed and the team facilitator is satisfied that “final” project strategic score values have been reached. A record is made of the final PSSVs suggested by each member of the team and a weighted average approach is adopted to arrive at an “agreed” PSSV for each key strategic benefit (Table III).

3.2.3 Stage three. Once the identification and evaluation stage has been completed and the PSSVs agreed, the final stage is to calculate the SI for the project. The SI is the weighted average of the CRs and PSSVs (Table IV). The team facilitator then sends this to each member of the appraisal team for his or her final approval. It is not intended to allow members the opportunity to “manipulate” the figure, but merely to seek acceptance of the procedure and commitment to its outcome.

Key strategic benefits	Each team members final PSSVs					Agreed PSSV
	Production	Marketing and sales	Environment	Personnel	Transport	
[A] Manufacturing flexibility	5.0	5.2	5.1	4.5	5.0	5.0
[B] Marketing – competitive advantage	7.4	7.8	7.1	6.3	6.8	7.2
[C] Organisational	5.8	5.0	5.0	4.7	5.2	5.1
[D] Environmental	3.3	2.9	3.9	2.7	3.3	3.3
[E] Logistics	7.2	8.1	7.5	6.8	8.2	7.7

Notes: The “agreed” PSSV for each strategic benefit is the weighted average of all the “suggested” PSSVs for that benefit. The values in bold are suggested by the team member in whose area the strategic benefit is particularly relevant. This member’s values are given a weighting of “2” while all other member’s values are given a weighting of “1”. In this example, it can be seen that the team member responsible for the personnel area of responsibility has consistently undervalued the strategic benefits, but by adopting a team approach the effect of this down-grading has been minimised

Table III.
Calculation of the agreed PSSVs

Key strategic benefits	CR (a)	PSSVs (b)	(a) × (b)
[A] Manufacturing flexibility	0.225	5.0	1.1250
[B] Marketing – competitive advantage	0.25	7.2	1.8000
[C] Organisational change	0.15	5.1	0.7650
[D] Environmental issues	0.125	3.3	0.4125
[E] Logistics	0.25	7.7	1.9250
Total	1		
	The strategic index = 6.0275 say		SI 6.03

Notes: The CR is the weight placed on a particular strategic benefit by senior corporate management to reflect its corporate importance in relation to other strategic benefits (Tables I and II). Each individual benefit is also given a PSSV, representing the benefit level within a given project (Table III). The SI is the weighted average of all the rankings and PSSVs

Table IV.
Determination of the SI

The CR of a particular key strategic benefit will be the same for all projects; it is only the individual PSSVs that may vary with each project. The PSSV for each key strategic benefit will vary due to management perceived level of value that each individual strategic benefit will bring to a particular project. It is these unique strategic values, together with their respective profiles, that produce a distinctive SI for each project.

4. Comments on the SI procedure

There are three generally accepted methods of estimating judgmental values from more than one manager.

- (1) The group discussion method: where managers meet, exchange their views and come up with a group value – a TMT consensus approach,
- (2) The pooling of individual values method: where managers are asked to supply their values individually, these values are then combined in some way to arrive at a single value. A variation of this method is the nominal group technique which does allow a limited amount of discussion.

- (3) The Delphi method: where individual managers are asked to supply their own values and assumptions which are then reviewed, revised by a group facilitator and returned to the managers for their further consideration until a consensus value is reached – usually using some kind of weighted average approach. Under this method the managers never meet to discuss their individual views but interact through the group facilitator.

In the SI model, the procedure for determining the corporate rankings uses a TMT consensus approach (group discussion), while the determination of the individual values placed on the key strategic benefits uses a combination of all the above three methods.

As investment appraisal team members are permitted, or even encouraged, to revise their original strategic benefit values having considered their positions with regard to the views (which have to be supported by succinct debate) of other team members, conflict within the team is constructively managed. Where group dissensus [as used by Simons (1995), to represent divergent perceptions of the business environment – the opposite of consensus] exists, Simons (1995) argues that active debate will moderate the process, resulting in dissensus having a positive impact, without this debate dissensus will have a negative impact. Dissensus is, by definition, a form of conflict, and conflict is necessary to stimulate thought and understanding in the decision-making process (Madu *et al.*, 1991). It is therefore, important that a team approach, which encourages active debate, is an integral part of any strategic benefit analysis.

It may be that those team members whose strategic benefit values are in the extreme are privy to information that is not generally known to the team as a whole. In such circumstances, when such knowledge is shared with other team members this may well influence some members to revise their “values”. On the other hand, some members may have extreme opinions that are based on misunderstanding or ignorance. In these circumstances, when such members are required to explain their position for their extremity, clarification and information from other team members may stimulate a “rethink” by them. Through this interaction and reaction approach, the whole process of the structured SI model results in informed and therefore, qualitative decision-making. This debate process allows the team to capitalise on its constitutional strength by highlighting different perspectives that may otherwise be left dormant. The whole procedure may take a number of sessions for managers to develop their final position with regard to the determination of strategic values. It is left to the team facilitator (the appraisal team leader) finally to draw this part of the process to a conclusion, when all views have been considered.

The interaction of managers in this process allows individual questions to be raised with immediate reactions from the team as a whole; thus, fostering a greater in-depth analysis and stimulating thought and understanding of the strategic benefits concerned. The importance of this approach is that a record of each individual manager’s final estimate of the project’s strategic score values is made and, while this may be influenced by other managers’ views, it is still based on each manager’s own individual judgement. This is not a consensus value in the true sense of the word, as it recognises the differences in the individual manager’s interpretations of a judgmental value. The perceptions of each manager to the judgmental values arrived at may often be different. There is therefore, no one “correct” value. Nevertheless, an agreed

consensus – through accepting the differences in opinion of each manager – is reached on the final values put forward.

The procedure to arrive at the SI is designed to extract “accurate” judgmental values and to formalise, in a structured way, what would otherwise be an unstructured and subjectively complex problem. This procedure is pragmatic and, to some extent, adopts a “soft systems thinking” type of process of inquiry, making use of experience-based knowledge through a learning cycle approach. It is pragmatic, not only because it is practical in application but also because it could be said that it adds to knowledge by making sense out of experience. On the other hand, it is structured and has defined objectives, which suggests a “hard systems thinking/engineering”, type of approach. Further discussions on these points are, however, left for future research.

5. Conclusion

Traditional investment appraisal models may be incapable of considering some of the strategic benefits offered by a capital project. Such strategic benefits may therefore, only be “valued” through adopting a judgmental approach. The procedure to elicit such judgements from a management team needs to consider many aspects of decision behaviour to arrive at a consensus outcome.

Although other strategic models have been developed, the SI is a more general strategic model. The SI model also differs in possibly six main respects to some earlier models:

- (1) it adopts a structured procedure aimed at maximising the effectiveness of group consensus outcomes;
- (2) it produces a unique project strategic score value for each key strategic benefit;
- (3) it applies a corporate ranking to the project strategic score values, which consider the relative corporate importance of strategic benefits;
- (4) the SI from one project can be compared with that of other projects;
- (5) it does not attempt to quantify all strategic benefits in financial terms – which we believe is a failure of some earlier models; and
- (6) it links project selection to business strategy.

The SI is therefore, what we would call, a “primary-profile model”.

The SI forces management to look more closely at the strategic issues of each investment opportunity and formally quantify, in a structured and analytical way, the perceived significance of a project’s key strategic benefits. It improves strategic awareness, for as Hambrick (1981) once argued, “strategic awareness cannot be assumed to exist, even at high levels in an organization”. In our opinion, a much broader dimension to the appraisal of capital projects is achieved by including the SI as part of a much wider appraisal process (Lefley, 2000).

An important prerequisite of the SI model is the requirement of corporate management to formulate a corporate and business strategy and to identify key strategic benefits looked for in each investment opportunity. It encourages top management to be more explicit in the development of corporate and business strategy, so there is a greater understanding of what the organisation’s strategy is. This fosters greater awareness of strategic issues and goals and should lead to a more focused top management team – with all members pulling in the same direction.

6. Recommendations for future research

This paper, having considered a number of issues relating to the evaluation of strategic benefits offered by capital projects and the interface between business strategy and project selection, has recommended a new strategic model, the SI. This new model, which, during its development, has been evaluated using both pragmatic and empirical methodologies is the subject of continuing research.

The SI model is aimed at:

- (1) identifying and evaluating strategic benefits within a given capital project;
- (2) improving strategic awareness within an organisation; and
- (3) linking corporate/business strategy with project selection.

Although these perceived benefits of the model have been previously rigorously tested, with very positive results, further case-study research is needed in order to strengthen its acceptance within the business community as a whole.

A particular area of research interest is the SI model's "procedure", which considers both "soft" and "hard" issues relating to the identification and evaluation of project strategic benefits. It has already been argued that the SI model is pragmatic and, to some extent, reflects a "soft systems thinking" type of process of inquiry, making use of experience-based knowledge through a learning cycle approach. On the other hand, it has been argued that the model is structured and has defined objectives, which suggests a "hard systems thinking/engineering", type of approach. Further research on these points could be based on the following research questions – To what extent does the SI model take on board the soft systems methodology (SSM) (Checkland, 1981; Checkland and Scholes, 1999)? or Is the SI model an hybrid of both "hard" and "soft" systems thinking?

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