



Strategic Control: Meshing Critical Success Factors with the Balanced Scorecard

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Companies operating in a fast-paced business climate must pay careful attention to non-financial performance indicators, which can be determined by both the Balanced Scorecard and Critical Success Factors. This paper analyses the relationship between the Balanced Scorecard and Critical Success Factors and devises a framework to bridge the two systems. The paper is based on a six-year research project of 15 companies in the Netherlands and some of the case studies illustrate how the integrated method can be employed across a variety of industries to provide a more adequate performance management system. © 2002 Elsevier Science Ltd. All rights reserved.

Introduction

How do organisations pick up emerging strategies while implementing the current strategy? Is the Balanced Scorecard able to bring about the right performance indicators for both tasks at the same time? We have found that a method based on market-orientated Critical Success Factors can help managers to deal effectively with the tension between strategy implementation and strategy formulation. This method would be of benefit for companies operating in dynamic markets with fast-changing customer needs.

Non-financial performance indicators can provide insights into the functioning of an organisation. There has been heightened interest among both academics and practitioners in performance management as a result of a confluence of factors:¹ the rise of Total Quality Management, the increasing attention of managers to the importance of focusing on the customers, Johnson's and Kaplan's work on over-dependence on financial numbers, and developments in information technology that facilitate

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the use of a vast amount and range of information. Only a limited number of empirical studies have examined the performance effects of using non-financial measures. Some studies find favourable results; others find a less clear impact on performance.² This could indicate that the 'right' performance management system is not always easily developed and identified.

We assert that the use of market-orientated critical success factors is key to a performance management system that provides information about changing customer needs. This conclusion was reached after a six-year research project which included a study of 15 companies in the Netherlands. We have devised a framework for combining the Balanced Scorecard and Critical Success Factors which itself provides an integrated system that gives support to strategy implementation as well as the ability to review the chosen strategy. This integrated system is especially valuable for companies in a dynamic environment. One company that implemented this integrated system was Autobike^a (see Exhibit 3). This company found the CSF-method useful in detecting changes in the market, although it already had a Balanced Scorecard in place for strategy implementation.

Kaplan and Norton introduced the method of the Balanced Scorecard, which is a way of designing a performance measurement system that takes into account non-financial indicators.³ The scorecard contains a variety of performance measures, including financial performance, customer relations, internal business processes, and learning and growth. Advocates of the Balanced Scorecard suggest that each unit in the organisation should develop and use its own scorecard, choosing measures that capture the unit's business strategy.⁴ Critical Success Factors (CSFs) can be seen as another means of choosing non-financial indicators. In this article, we distinguish between the use of CSFs for strategy implementation and for strategy formulation. When CSFs are used for strategy formulation, the CSFs method for strategic control comes into view. This method is applied to derive Critical Success Factors from the market. These CSFs are then broken down into critical business processes and critical control variables. Both the Balanced Scorecard and the CSFs method direct attention to 'what is important for the success of an organisation'. This article explores the relationship between the CSFs method and the Balanced Scorecard.

In our analysis of the relationship between the Balanced Scorecard and the CSFs method, we distinguish between applications of diagnostic, interactive and strategic control. We follow Simons by recognising the potential power of management control systems in the strategy formulation process.⁵ Diagnostic control systems are formal systems used for monitoring the adherence to plan and are thus useful for strategy implementation. Interactive control focuses on strategic uncertainties and strategic review, while using information from the system that is designed for strategy implementation. A strategic control system is a formal system that aims at reviewing and reformulating strategy. In this article, we contend that the Balanced Scorecard provides opport-

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^a We have used a pseudonym to protect confidentiality.

unities for diagnostic and interactive control, but not for strategic control. This last option is not feasible, because the chosen strategy is the basis for filling out the Balanced Scorecard, and implementation of this strategy is a major reason for the use of the scorecard. Implementation and review of the chosen strategy are argued to be irreconcilable objectives leading to ambiguous actions. In contrast, Critical Success Factors can be employed to establish a direct relationship with the market (the CSFs method of strategic control) and can, in this way, lead to a strategic control system. This is especially interesting for customer-orientated companies facing many strategic uncertainties.

The following conclusion is drawn from the subsequent discussion of the Balanced Scorecard and the strategic control CSFs method. The aim of the Balanced Scorecard is to implement the strategy chosen by the organisation by reporting the results, whereas the strategic control CSFs method functions as a timely warning of potential threats to the strategic plan. Both methods are recommended for combined use in performance management; they are complementary. The use of the Balanced Scorecard alone may cause firms to notice changes in the market too late, if at all. Changes in the market can be detected directly through strategic control based on the introduced CSFs method.

Management control

In order to make the relationship between the CSFs method and the Balanced Scorecard more explicit, we begin by discussing the triad of control forms. These forms are labelled as diagnostic, interactive, or strategic control.

Diagnostic control systems are the formal information systems that managers use to monitor the organisational outcomes and to correct deviations from pre-set standards of performance.⁶ The main characteristics of diagnostic control systems are:

- 1 They facilitate measurement of the outputs of a process;
- 2 They provide predetermined standards against which actual results can be compared: and
- 3 They can correct deviations from standards.

Corporate performance can be assessed by measuring actual achievements and by comparing them with pre-set standards and other desirable results. The organisation can therefore adjust its activities according to the targets set during the planning stage. Management can also set allowance levels for possible fluctuations. Between those levels, direct intervention is not necessary (management by exception).

The interactive control method focuses on adapting the strategy to the changing environment, providing a framework for a more incremental and 'emergent' approach to strategy formulation. The main characteristics of interactive control systems⁷ are:

- 1 These systems start with a subset of management control

information, which is considered important, given the strategic uncertainties faced by an organisation;

- 2 Information generated by the system is an important and recurring agenda addressed by the highest level of management;
- 3 Such a system demands frequent and regular attention from operating managers at all levels;
- 4 Data generated by the system are interpreted in face-to-face meetings of superiors, subordinates, and peers—and are discussed in light of future strategic initiatives;
- 5 These strategy meetings take the form of debate of the underlying data, assumptions, and action plans.

The use of interactive control systems is costly

Even if we only take into account the cost of the time of top and senior managers, the use of interactive control systems would still be costly. For this reason, the choice of parts in the management control system that are to be used interactively must be precise. According to Simons, the structure of an interactive control system depends on factors such as technological dependence and customer orientation. When a company strongly relies on a specific technology, it should deal cautiously with technological developments. When an organisation is less dependent on technology, it can devote more attention to finding ways to satisfy customer needs. The core of the interactive control system is then the continuous monitoring of customer needs and identification of their (expected) changes.

Following this analysis, we conclude that an interactive control system can be put into operation in various ways and can be altered to suit changes in the market. Anthony and Govindarajan base the choice of an interactive control system on strategic uncertainties in different markets:⁸ ‘Since strategic uncertainties differ from business to business, senior executives in different companies might choose different parts of their management control system to use interactively’. When strategic uncertainties become substantial, a large part of the management control system should also be used interactively. Interactive control is not a unique type of control system, but is merely a diagnostic control system used interactively. The information is used differently. Table 1 presents the main differences, according to Simons,⁶ between diagnostic control and interactive control. The last column captures the features of a strategic control system based on the same dimensions that were used by Simons.

Strategic control

Next to diagnostic and interactive control, a third approach can be recognised—strategic control.⁹ Like the interactive control approach, strategic control aims at reviewing strategy and its eventual adjustment. The difference between the two approaches is especially clear with respect to the way in which the strategy is perceived as remaining valid. Strategic control is about a formal system that focuses on changes in the bases of strategic planning. This is related to the assumptions that underlie strategic

Table 1. Comparison of diagnostic and interactive control systems⁶

	Diagnostic control	Interactive control	Strategic control
Purpose	Provide motivation and direction to achieve goals	Stimulate dialogue and organisational learning	Provide motivation and direction to <i>keep on</i> achieving goals
Goal	No surprises	Creative search	Anticipating/changing
Analytical complexity	Deductive	Inductive	Mainly deductive, also inductive
System complexity	Complex	Simple	Complex formal system
Time frame	Past and present	Present and future	Present and future
Targets	Fixed	Constantly re-estimated	Set by business environment
Feedback	Negative	Positive	Mainly negative, but also positive
Adjustment to	Inputs or process	Double loop learning	Continuous adjustment (single and double loop learning)
Communication	Eliminate need for talk	Provide common language	Provide necessary information about changing customer needs
Staff role	Key gatekeepers	Facilitators	Translate customer needs into internal activities and benchmarks

decision-making. The strategic control system can, for example, signal changes in the competitive environment; management may react to these perceived changes by adjusting the content of the strategy. In contrast, interactive control is based on a system that is developed for implementation of the strategy. If, however, management only pays attention to making planning and results in accordance with strategy, it may find no reason to change the strategy. This is a problem, because the plan itself may be inaccurate, and the need to adjust the strategy may remain unnoticed. When a deviation from the planned performance levels is the trigger for reviewing existing strategy, the effort put into changing the strategy will be relatively low in case these planned performance levels are met. This creates an unfavourable situation if the plan itself is not correct.

Sound adjustments in the strategic plan should always be triggered by a system that is designed to gather information about opportunities and threats arising from the business environment. The corporate information and control system that is constructed to enable the implementation of the strategy (the diagnostic control system) is essentially unsuitable for immediately establishing a desirable relationship with the business environment. For strategic control, firms must be able to collect data to check the validity of planning assumptions and to identify new opportunities and threats, interpret the data and respond to the information. Also important is the involvement of line managers in the process, which will ensure that decisions are made in light of an updated set of organisational capabilities, strengths and weaknesses, and that the information is interpreted from multiple perspectives.¹⁰

The choice of implementation of the strategic control system depends on the strategy of a company and the uncertainties it faces. For instance, if technological dependence is low, and if the company follows a highly customer-orientated strategy, then the

strategic control system should be designed to serve changing customer needs.

Critical Success Factors

The literature is hardly unanimous in its definition of CSFs and can lead to ambiguity. We will elaborate on two of these perspectives: strategy implementation and strategy formulation.

Strategy implementation

Rockart gives the following definition of CSFs: 'Critical success factors are, for any business, the limited numbers of areas in which results, if they are satisfactory, will ensure competitive performance for the organisation. They are the few key areas where things must go right for the business to flourish.' According to Rockart, and Boynton and Zmud, the strategy determines the CSFs.¹¹ They claim that CSFs are meant to determine which information is of importance for the management control system. Various strategies call for different information, and, to that end, the management control process starts with the identification of CSFs. In general, the chosen strategy determines the CSFs, and the CSFs subsequently form the basis for the design and functioning of the management control systems. Therefore, the most important role of management control systems is to support the implementation of strategies.

Diagnostic control systems are used for monitoring adherence to plan and, thus, for strategy implementation. CSFs that are defined as a means for strategy implementation (the first perspective on CSFs), are therefore almost by definition appropriate for diagnostic control. In addition, the diagnostic management control system that is based on these CSFs can also be used in interactive processes. The strategy is then discussed and evaluated on the basis of information yielded by the management control system.

Strategy formulation

When CSFs are used for strategy formulation, they support the strategic planning process. The CSFs follow from the vision and mission of the organisation and from a strategic evaluation of the market. When CSFs are used for strategy formulation, then market and mission are the obvious starting points. The CSFs can be regarded as 'order-winning criteria'—for instance, quality and lead-time. Here, the approach of Wijn et al. is appropriate.¹² They define CSFs as: 'The factors on which a company can distinguish itself from competitors, and thus build a stable, positive relation with the market.' The general acceptance of the market-orientated approach to CSFs is substantiated by the description of CSFs in literature such as Atkinson et al.,¹³ who describe CSFs as: 'The elements, such as quality, time, cost reduction, innovativeness, customer service, or product performance, that create long-term profitability for the organisation.' This market-orientated approach to CSFs is especially interesting for companies

The management control process starts with the identification of CSFs

surrounded by strategic uncertainties that relate to customer preferences.

As shown in the previous section, a need to adjust a given strategy is signalled by a formal strategic control system that identifies changes in the basis of strategic planning. Tardy signalling of these changes can render the strategy useless. A strategic control system can be developed by means of the CSFs method of strategic control, which will be introduced in the next section. This method uses a market-orientated approach to CSFs (the second perspective on CSFs as described above).

The CSFs method of strategic control

Different perspectives on CSFs are presented in the literature. According to the second perspective, CSFs can be used for strategy formulation and for strategic control. This section discusses the functioning of a strategic control system that is based on market-orientated CSFs. Figure 1 presents the Critical Success Factors method of strategic control.

In the CSFs method of strategic control, the CSFs are derived from the market, and are not automatically manageable and controllable. Therefore, the CSFs method relates the CSFs to critical business processes (CBPs), and proceeds from these business processes to critical control variables (CCVs).¹⁴ The model is operationalised in three stages. In the first stage, the CSFs are determined on the basis of the market. Once a firm defines its CBPs (Stage 2), it establishes the critical control variables and the benchmark values that apply to these CCVs (Stage 3). The CCVs are therefore derived from the CSFs determined in the first stage (see also Appendix A for a description of the CSFs method).

Crossing the boundaries set by the CCVs initially causes a shift back to CBPs (Stage 2). If nothing appears to be wrong with the CBPs, the firm returns to Stage 1, in which CSFs are determined.

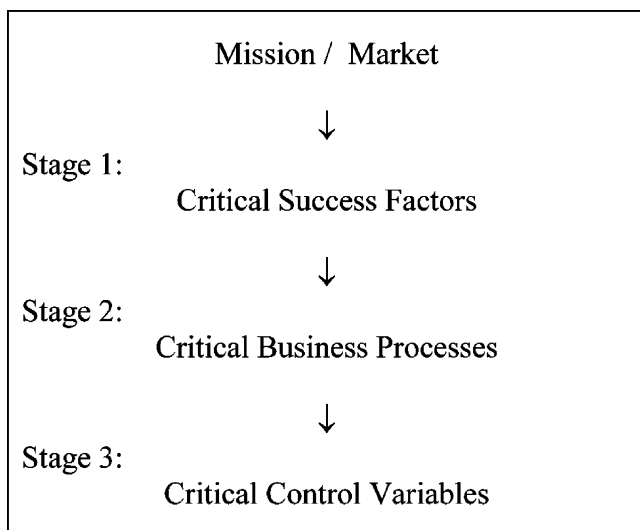


Figure 1. Structure of the CSFs method of strategic control

Subsequently, a signal must be generated to strategic planning that some changes have occurred and that the bases for the strategy must be adjusted (strategic control). Finally, the firm returns to the mission/market.

Exhibit 1 shows the application of the CSFs method in the metalworking machinery industry, and Exhibit 2 gives an example in the technologically more complex X-ray machinery industry. For confidentiality the names of the firms have been changed.

Exhibit 1. The CSFs Method Applied to the Metalworking Machinery Industry

CNIC

CNIC is a medium-sized, leading producer of metalworking machines, such as scissors, piercing and cutting machines. The following market-orientated CSFs for this company were identified:

- 1 price/quality ratio of a product; and
- 2 flexibility in product adaptation.

CNIC depends on a few specialised suppliers. Its market outlets include industrial users seeking precise and safe machines that require little maintenance and can be adjusted to specific systems of metal processing. The engineering process (development and adjustment of products and systems) exerts great influence on the achievement of the CSFs, and is therefore considered a critical business process. The emergence of a strong market in used goods has resulted in downward pressure on the selling prices. By offering qualitatively high performance and fully customised products, CNIC ensures its competitive position. The purchase price of components is the determining factor for the final unit cost. Purchasing components is therefore also regarded as a critical business process. Engineering and expertise of personnel have a lot of influence on the quality of the final product and the ability to deal with specific product adaptations. Engineering and recruiting/training of personnel are therefore also considered to be critical business processes. Thus, the following critical business processes are involved:

- 1 engineering (development and adjustment of products/systems),
- 2 purchasing components, and
- 3 recruiting and training personnel.

For these processes, the critical control variables are selected based on the CSFs. The following critical control variables are in place:

- orders for non-standardised products as a percentage of the total number of orders;
- lead-time for dealing with/settlement of customer complaints;

- analysis of guarantee cases (the changes made in the purchasing or production process);
 - number of alternative purchasing possibilities offered;
 - purchase ratio: purchase costs as a percentage of sales;
 - number of educational and training courses followed (successfully);
 - number of (knowledge) worker hours hired;
 - number of improvement proposals from personnel;
 - motivation-indicators personnel: illness/absenteeism and employee turnover data
 - employability of employees: number of direct employees capable of working at two or more different workstations as a percentage of total number of direct employees.
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Exhibit 2. The CSFs Method Applied to the X-ray Machinery Industry

MEDI Ltd.

MEDI Ltd is a producer of technologically complex products: X-ray machinery and related products. For this company, the following market-oriented CSFs are identified based on a strategic evaluation of the market:

- 1 product quality
- 2 power to innovate
- 3 assortment range
- 4 service

At MEDI Ltd, the quality of the product is determined mainly during a process of continuous product development. The engineering process is therefore critical: quality is determined by the degree to which the results of research can be built into the product. The after-sales service unit aims at correcting failures in a fast and adequate way and is responsible for preventive maintenance of the machinery sold. Furthermore, the sales representatives must inform the consumers about new functions of the product on a regular and frequent basis. Informative communication with the consumers is considered very important. The critical business processes include the following:

- 1 adjusting products (renewals/innovations)
- 2 extending after-sales service
- 3 communicating with clients

For these processes, the selected critical control variables are the following:

- percentage of the assortment where the new developed components are used or the new developed functions are implemented;
 - number of breakdowns and hours of maintenance;
 - first-time fix rate (percentage of breakdowns that can be fixed the first time);
 - number of visits of clients to prototypes and test-mountings.
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Until now, we have defined CSFs, introduced the CSFs method and related CSFs to strategy and various forms of control. In the next two sections, we do the same for the Balanced Scorecard. Finally, we link the two methods.

The Balanced Scorecard

In their publications, Kaplan and Norton attempted to get rid of the most commonly used system of management reporting on the basis of financial data.¹⁵ They argued for achieving a balance between financial and non-financial data in management reporting. To this end, they introduced four perspectives: the financial perspective, the customer perspective, the internal perspective, and the learning and growth perspective (see Figure 2).

Since the four perspectives are linked in a cause-and-effect relationship, they cannot be examined separately. Each variable that is selected for the scorecard has to fit this sequence of cause-and-effect relations; moreover, the variables reinforce one another (synergy effects). The number of variables used should be limited as much as possible.

The four perspectives described above do not, however, restrict the Balanced Scorecard. The choice of the number of perspectives depends on the sector in which a business operates, and on the

The Scorecard has been developed not to serve strategy formulation, but to implement it

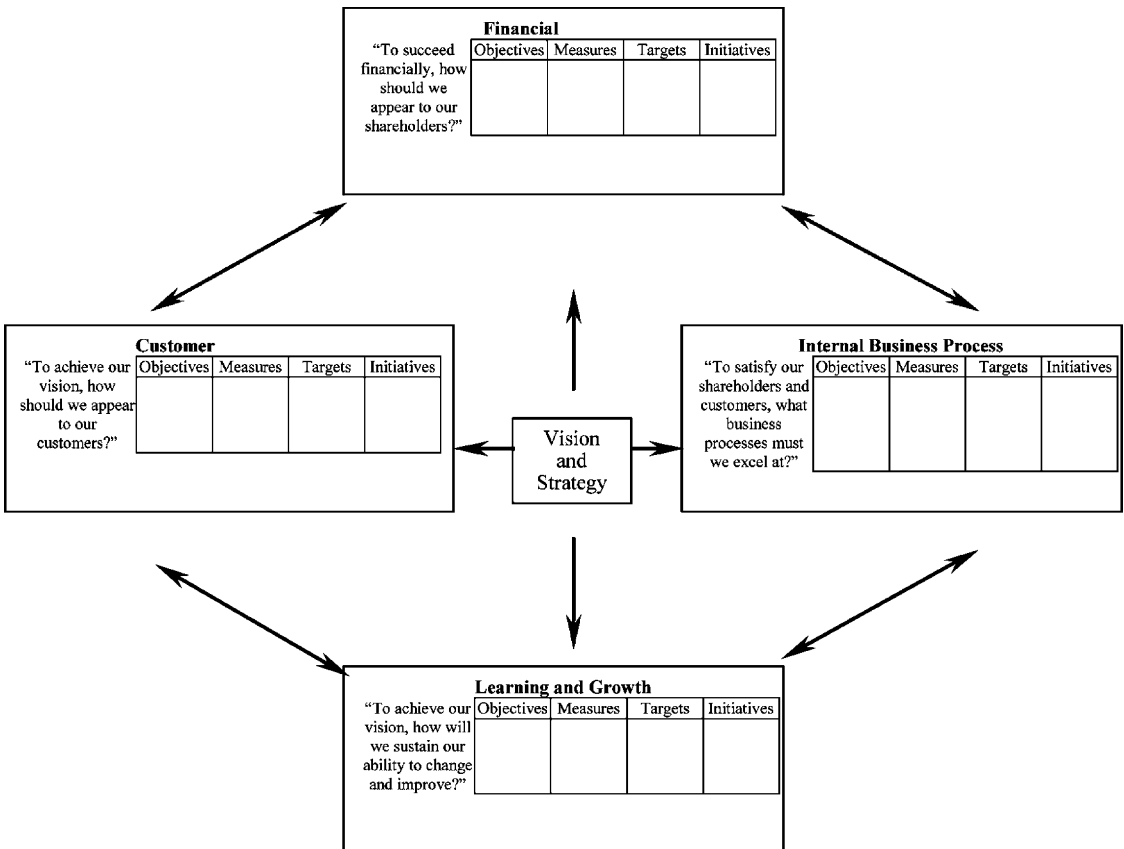


Figure 2. Balanced Scorecard: transformation of strategy into short-horizon objectives

strategy chosen. It should be noted that the scorecard has been developed not to serve strategy formulation, but to implement it. The introduction of the Balanced Scorecard has prompted many companies to start thinking about strategy formulation. In practice, the scorecard often turns out to be a structured version of what management has in mind. According to Kaplan and Norton, the measurement system evolved into a strategic management system after a couple of years.¹⁶ They recognise that the basis for the Balanced Scorecard and the processes that occur in a company must be adjusted to each other periodically. However, in our opinion, the role of the Balanced Scorecard in strategy formulation activity is bounded.

The Balanced Scorecard and control systems

Simons sees the Balanced Scorecard as a diagnostic control system, the rationale being that it is used for strategy implementation.¹⁷ However Kaplan and Norton explicitly state that the Balanced Scorecard should not be considered as a diagnostic control system.¹⁸ The authors argue that such a system incorporates many measures that are not critical to successful implementation of the strategy.

Kaplan and Norton themselves indicate the need for a double-loop learning process: 'Managers need information so that they can question whether the fundamental assumptions made when they launched the strategy are still valid' (strategic control). This should be achieved by basing the scorecard on a series of cause-and-effect relationships derived from the strategy, including estimates of the response time and estimates of the magnitudes of the linkages among the scorecard measures. These relationships should be tested periodically; if observations contradict the expected relationships, then strategic learning and improvement is a necessary next step. The way in which means-ends relationships are mapped and placed into the Balanced Scorecard boxes has been questioned by several academics.¹⁹ Nørreklit argues that Kaplan and Norton's claim of a causal chain of non-financial measurements that is created by the BSC is invalid. She states that there is not a causal but rather a logical relationship among the areas analysed: 'Customer satisfaction does not necessarily yield good financial results.' Otley observes little guidance as to how 'double loop' learning can be achieved by the Balanced Scorecard. 'How can the organisation pick up emergent strategies and incorporate these in the scorecard?'

We conclude from the above criticism that the Balanced Scorecard gives no adequate feedback on the content of the strategy, and thus cannot be used for strategic control. The model presented in Figure 3 describes the relationship between the Balanced Scorecard and CSFs, when CSFs are used for strategy implementation (the first perspective on CSFs).

This model is based on Kaplan and Norton's work. The mission and the market determine the strategy, while the strategy, in turn, forms the basis for the CSF-s and, consequently, for

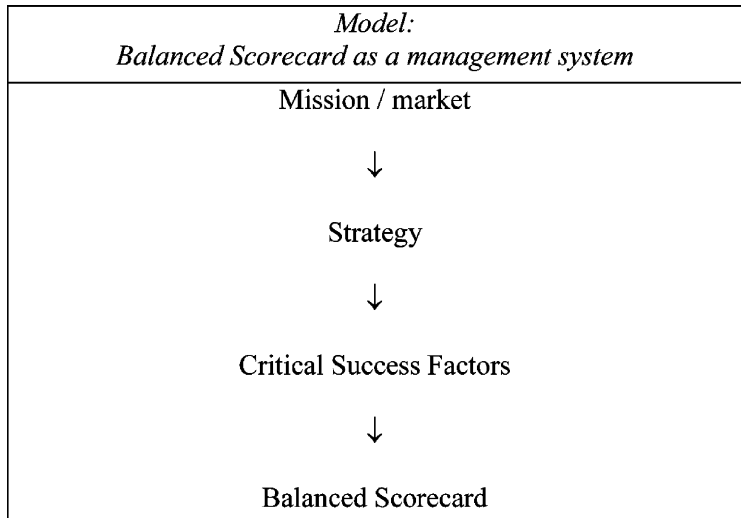


Figure 3. Relation between CSFs used for strategy implementation and Balanced Scorecard

the BSC. With this model, the authors come back to the BSC measurement system that they introduced earlier. They state that the performance measurement system should make the expectations concerning the cause-effect relationships among these performance indicators explicit. This is the only way in which the relations can be managed and steadily revalidated. The authors provide examples of cause-effect relationships, e.g., a condition for a good result in the financial perspective can be that there are a lot of repeat orders from customers, which requires customer loyalty. An analysis of customer needs may lead to the conclusion that supply reliability is important to customers. Both customer loyalty and supply reliability constitute performance indicators that reflect the customer’s viewpoint. High supply reliability requires short throughput time and high quality (internal perspective). This can only be realised by increased training and focus on the skills of employees (the learning and growth perspective).

Kaplan and Norton, however, do not further specify the procedure for the functioning of the BSC as a system for strategic revalidation and learning. The authors seem to describe, partially, the interactive use of diagnostic system. A shortcoming of this management system arises from the fact that no direct relationship can be established with the market, because here the CSF-s are based on pre-determined strategies. Strategic control can offer a solution to this problem. We proceed to elaborate on this issue in the following section.

The Critical Success Factors method and the Balanced Scorecard

When an organisation operates in an uncertain environment, and, as a result, the strategy is evaluated on a regular basis, it

should consider a more formal strategic control system. But what should such a strategic control system look like? And what should be the role of CSFs? Below, we will discuss our view on the role of CSFs in a strategic control system that focuses on customer needs (the second perspective on CSFs).

As mentioned earlier, the Balanced Scorecard may be used as a diagnostic control system, part of which—after some refinement—can be used for interactive control. However, CSFs (for strategy implementation) can indicate that something is wrong, but cannot signal whether the chosen strategy/strategy implementation is inaccurate, or whether changes have occurred in the market. The CSFs method of strategic control, however, immediately signals whether and when changes in the market occurred. When it becomes obvious that there is a significant difference between the benchmark value and the actual value, management will review the stages of the CSFs method to see what has caused these deviations. If the deviation is not acceptable, management will have to examine the critical business processes. If these processes are performing well, a signal is given to initialise a strategic review process, because the basis for the strategic planning has been changed. The outcome of this process should be used as a starting point for the Balanced Scorecard. Figure 4 describes the framework, which combines the CSFs method of strategic control and the Balanced Scorecard.

In our opinion, these two systems supplement each other well. On the one hand, an advantage of the strategic control method of CSFs is that it is a measurement system directly connected to the market. On the other hand, the Balanced Scorecard is meant ‘... not only to clarify and communicate strategy, but also to manage strategy’. The Balanced Scorecard is based on a number of premises that cannot be further monitored during the process. To that effect, the CSFs method of strategic control that we describe appears to work properly. This system was introduced by a company in the retail industry on top of an existing Balanced Scorecard (see Exhibit 3).

Exhibit 3. The Complementary Systems Applied in the Retail Industry, Autobike Ltd.

Autobike Ltd.

Autobike Ltd is a subsidiary of a Dutch retail group. Autobike has a branch network of about 120 stores in the Netherlands, Belgium, Germany and the UK. Its main product groups are: accessories for cars and bikes; bikes; and mobile communication. Autobike has a leading position in its home market in the Netherlands but it faces severe and growing competition in all product groups. It is not expected that new companies with the same retail formula will enter the market. The company serves a broad range of customers. However, it does not operate in the highest price segment, but neither is it a discounter.

Autobike's mission statement is 'The best offer for people on the

move.' The objective is to keep the company at the same level of profitability by focusing on several issues. First, related to expansion, the company intends to strengthen its (dominant) market position in various countries by integrating the large number of new and recently acquired companies and by disposing of more than 100 stores. Second, the company aims to control and reduce costs on all activities. One way to lower costs is by joint purchase. Third, the company continues to work on the retail formula. This formula is based on two notions: competence and dominance. Competence refers to the expertise that Autobike strives for with regard to the whole range of products and services that is offered. Dominance means that customers will consider buying the products only at Autobike, and that other possibilities are just not considered. Consumers want a good product, with a good price/quality performance. In addition, fun-shopping is becoming more important. In general, a market-orientated approach is adopted when (re)designing the retail formula. This is especially important, because the buying behaviour of customers is changing rapidly.

The project on the use of the CSFs method based on strategic control follows immediately from the continuous effort to maintain and to improve the market-orientation. The project started by the identification of the following market-orientated Critical Success Factors:

- knowledge of the client
- assortment range
- price
- attractiveness of the shops
- the presence of skilled/helpful employees

These CSFs are useful at the corporate level for the whole range of products and services. A translation into the lower specific levels in the company is made by the following two stages of establishing critical business processes and selecting critical control variables.

An analysis of the company's activities and environment reveals that human resource management is an important subject to take into account. A tight labour market, for instance, has diminished the quality of personnel, due to a high turnover and increasing labour costs. Moreover, extended shop opening hours have resulted in lower sales per hour and an increase in relative labour costs. The focus on human resource management is also reflected in the last CSF 'skilled/helpful employees'.

The next step is to identify the critical business processes. Good performance on the CSFs is necessary in order to realise Autobike's full potential. Good performance on the CSFs depends on the functioning of the critical business processes. The critical processes are identified by analysing all activities that are performed by Autobike. *Critical* business processes are those with the highest total impact on the level of performance on the market-orientated CSFs. The results of this analysis are summarised in the following list of critical business processes:

- Informing and serving the client

- Selecting new products
- Determining the selling price
- Developing the shop formula
- Recruiting and selecting personnel

The last step in the CSFs method for strategic control is the selection of the critical control variables. A comparison of the actual value with the benchmark value on these critical control variables may result in negative deviations. In that case, an analysis of the cause of the deviation may result in the finding that changes have occurred in the market place and that the basis for the strategy needs adjustment. For Autobike, the selected critical control variables are the following:

- complaints about products and employees
- sales of new products
- prices of competitors
- visitor satisfaction
- level of employee education per shop
- cost of employees as a percentage of sales

Strategic Control is of limited use in a stable market

One of the six market-orientated CSFs in Exhibit 3 is 'knowledge of the client'. The company has identified the critical business process, 'Informing and serving the client', to match with this CSF. Along with it goes the critical control variable 'complaints about products and employees'. If a change occurs in this field, it is signalled by going from the CSF to the CCV to check the variance between the benchmark value and the actual value. If the deviation is not acceptable, then it is necessary to check the critical business process (informing and serving the client). If this process is performed well, then a signal has to be given to initialise the strategic review process (strategic control), which functions as input for the Balanced Scorecard. In case of an acceptable variance or a 'client information and selling process' that is out of control, no signal is given to the strategic review process.

Balanced Scorecard and Critical Success Factors method put into practice

Today's competitive environment is highly dynamic, and many firms face rapidly changing customer needs. In order to be successful, firms must continuously adjust their competitive strategies. In our study of 15 companies, we examined the development of performance evaluation and control systems that would promote more immediate and adequate insights into the functioning of the organisation. Our ideas about the relationship between the Balanced Scorecard and the CSFs method of strategic control are largely based on our experience with these 15 companies. Three of the companies in our study introduced only the Balanced Scorecard and were not convinced of the added

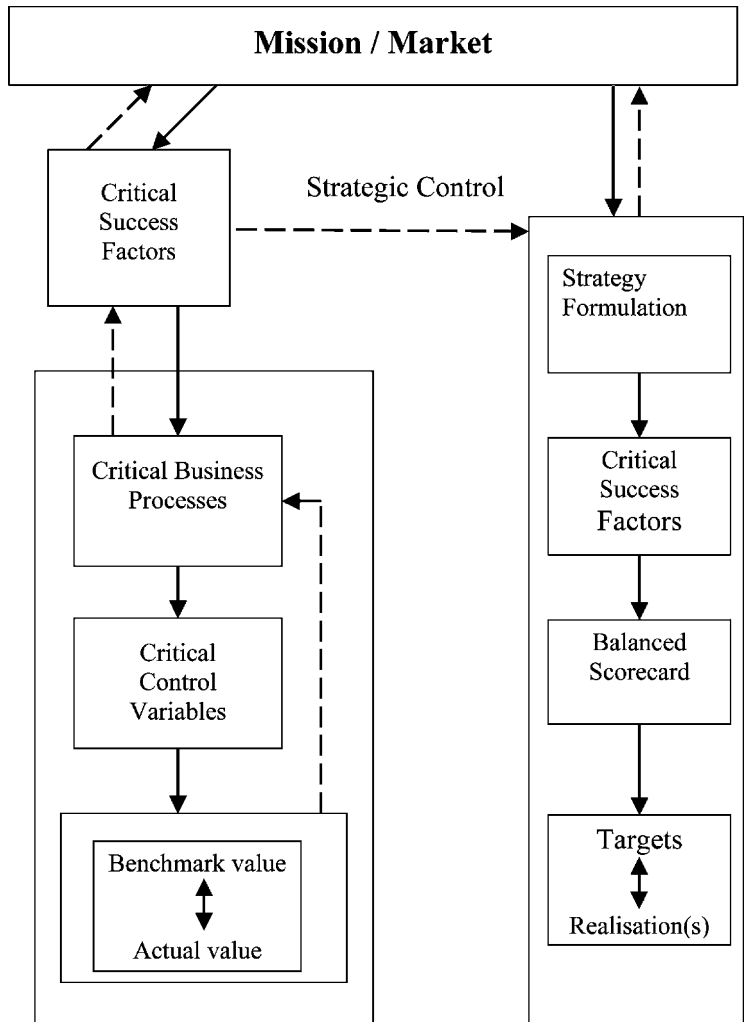


Figure 4. Complementarity of CSFs method of strategic control and Balanced Scorecard

value of the CSFs method of strategic control for their situation. These companies all worked in a fairly stable market. In their situation, indeed, the CSFs method of strategic control would have been inappropriate, as it is costly to implement and strategic control is of limited use in a stable market. Five companies moved forward with only the CSFs method of strategic control, and not with the Balanced Scorecard. These companies were already satisfied with their current information systems as far as their strategy implementation objective was concerned. However, the management of these firms indicated that their systems missed an external view. This observation makes sense, as these firms all operated in an unstable market. The remaining seven firms realised the combined implementation of the Balanced Scorecard and the CSFs method for strategic control. In these cases the management anticipated a tension between the rigour necessary for effective strategy implementation and the flexibility required for timely strategy adjustment. This flexibility is the basis of sus-

tained competitive advantage for companies facing many strategic uncertainties. The Balanced Scorecard was not designed to be flexible in that sense, so, when this kind of flexibility in the performance management system is deemed vital, the CSFs method of strategic control should be added. Table 2 shows that the firms in the study came from all kinds of industries. Twelve companies from different industries considered the CSFs method of strategic control to be a useful approach.

The management of the companies in the study identified the following implementation issues as important: first, the most apparent pitfall is choosing performance indicators without any systematic relationship. However the greater challenge is to maintain these systematic relationships in the implementation process. Most firms understood the impossibility of introducing a complete system all at once. 'Learning by doing' was the starting point in nearly all of the firms. Generally, firms identified the need for information on certain control variables or performance indicators during the development phase. However, in several firms, all sorts of difficulties with the information system made the generation of the necessary data unfeasible in the short run. Accompanying these data problems was the risk that the attention of management might shift to activities for which information was easily and readily provided.

Successful implementation of the Balanced Scorecard and/or the CSFs method depends on the commitment of senior management and the involvement of employees. In addition, the development and the introduction of the systems should not take too much time, as this may cause a loss in focus and commitment. In order to give an impression of the number and level of employees involved in the implementation of the performance measurement and control systems in the 15 companies in our study, we listed the initiators, the developers/implementers, and the other

Table 2. Studied firms introducing the Balanced Scorecard and/or the CSFs method

Industry ⁱ	Studied firms introducing:		
	BSC	CSFs method	BSC and CSFs method
Manufacturing	2	3	2
Wholesale and retail trade	1	–	3
Electricity, gas and water supply	–	1	–
Financial intermediation	–	1	–
Real estate, renting and business activities	–	–	1
Education	–	–	1
	3	5	7

ⁱ Nomenclature Activity Classification Europe (NACE, 1995).

organisational members involved. Initiators of the implementation projects were CEO/Management team (13 projects), CFO (one project), and Controller (one project). The process of development and implementation was the responsibility of the project team (two projects), the steering team and the project team (two projects), and the controller (11 projects). When applying the CSFs method, senior management was always involved in identifying critical success factors and critical business processes, and middle management was involved in selecting the critical control variables. This last part was especially important for gaining support and understanding with regard to the system developed. In general, the development and introduction of the systems took between six months and a year.

Conclusion

Prevailing business practice values the use of non-financial as well as financial performance indicators. The choice of the appropriate indicators is important for the functioning of the organisation. For this reason, Kaplan and Norton introduced the Balanced Scorecard. The Critical Success Factors method is another approach used to select financial and non-financial indicators, but there is much confusion in the literature surrounding the content and scope of the notion of Critical Success Factors (CSFs). This is understandable as CSFs are defined from differing points of view—strategy implementation and strategy formulation. Likewise, they can be used for various forms of control—diagnostic, interactive, and strategic control.

The relationship between CSFs and the Balanced Scorecard as described in the literature focuses mainly on the use of CSFs for strategy implementation. A strategy is derived from the market, CSFs are used for implementation of this strategy, and the Balanced Scorecard is subsequently based on these CSFs. A problem is that the Balanced Scorecard has no direct relation with the market, because it reflects the chosen strategy. Changes in the market can be detected directly through strategic control based on the CSFs method introduced. As soon as changes are detected, the system signals them to strategic planning (strategy formulation), highlighting the need to adjust the basis of strategy. The CSFs method of strategic control and the Balanced Scorecard are therefore complementary and can supplement and support each other in an integrated performance management system.

Appendix A

The CSFs method of strategic control

To determine the Critical Business Processes (CBPs) it is possible to use a method originally developed by Ward.¹⁴ Applying this method, the management team composes a list of business processes that are essential to fulfill the mission of the company. From the total number of business processes listed, the CBPs have to be determined. A matrix is used to relate the business processes to the Critical Success Factors (CSFs) in order to get

Business Processes \ CSFs	1. Best-of-breed product quality	2. New products that satisfy market needs	3. Excellent suppliers	4. Skilled workers	5. Excellent customer satisfaction	6. Exploit new business opportunities	7. Achieve lowest delivered cost	(A) Count	(B) Process quality
	1. Research the market place								
2. Measure customer satisfaction									
3. Advertise products									
4. Monitor competition									
5. Measure competition									
6. Educate vendors									
7. Measure personnel satisfaction									
8. Educate/train employees									
9. Define new product requirements									
10. Process customer orders									
11. Develop new products									
12. Monitor customer complaints									
13. Negotiate manufacturing design									
14. Pay vendors									
15. Define future skills									
16. Select and certify vendors									
17. Promote the company									
18. Track finished products									
19. Support installed products									

Fig. A1. Business Process/CSFs matrix (adjusted)

an overview of the importance of each business process for the performance of the company.

Figure A1 shows an example of such a matrix. The left part of the matrix reports the results of questions answered by the management team for every CSF; which specific business processes have to be executed well to achieve a competitive benefit in terms of a unique position and a sustainable relation with the customer. The right part of the matrix is the analysis-part where the base is founded for the determination of the CBPs. Two variables are used to do this: (a) importance of the process, and (b) process quality.

First, the number of times that a specific business process is considered to be of importance is summed in column (A). Second, an indication is given of the present quality of the business process in column (B), varying from A (=no need for improvement) to E (=still has to be developed). The Critical Business Processes are

The authors would like to acknowledge the helpful comments on earlier drafts by Jan Bouwens, Johan van Helleman, Laurence van Lent and David Otley.

the business processes which are considered to be of overriding importance for the future success of the company counted by the scores on the importance for the CSFs, and of which the quality at this moment still can be improved.

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