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WORKING PAPER

An Empirical Study of the Influence of Balanced Scorecard-Based Variable Remuneration on the Performance Motivation of Operating Managers

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Abstract

The purpose of this study is to investigate managers' perception about the effectiveness of the linkage between the Balanced Scorecard and variable remuneration. Kaplan and Norton (1996,2000) propose to use the Balanced Scorecard not only as a tool for communicating and monitoring strategy but also as a tool for evaluating and rewarding managers. So far little research has been performed on the effectiveness of Balanced Scorecard-based reward systems. This paper reports on the perceived impact of linking variable remuneration to the Balanced Scorecard using an exploratory field study in a Belgian manufacturing division of a Danish petrochemical company. The study first reviews the management control literature addressing reward systems, performance target setting and the impact of performance measurement attributes on manager's motivation. Then we analyze the empirical data collected via in-depth interviews, supplemented with an in-company survey. Based on these data we were able to formulate hypotheses and build a model on the motivational impact of a BSC-based variable remuneration system.

Key terms: Management Control – Performance Measurement – Balanced Scorecard – Compensation – Rewards

1. Introduction and description of the research problem

The Balanced Scorecard is used more and more by companies as a basic framework to structure performance reporting. The Balanced Scorecard, developed by Kaplan and Norton (1992, 1993, 1996), enables management to translate the mission, the goals and the strategies of the company, its different business units and management functions into a coherent set of performance measures. This set of performance measures is divided into four perspectives: the shareholders' or financial perspective, which groups the measures assessing the extent to which the company realizes the shareholders' expectations; the customers' perspective which measures the perception of the company by its clients; the internal processes' perspective which determines the performance of critical internal processes; and the innovation and learning perspective which measures the learning ability, the growth potential and the improvement and change capacity.

When developing a Balanced Scorecard the critical success factors are identified, starting from the mission, the goals and the strategy. Then, the most appropriate performance measures are chosen for these critical success factors, sometimes also called strategic objectives.

The Balanced Scorecard offers, besides the financial performance reporting of the past period, also insight into the evolution of the critical success factors which are of vital importance to the future financial success. In this sense the Balanced Scorecard can be considered as measurement tool which contributes to a more effective strategic management of the company and to the creation of a 'Strategy-Focused Organization' (Kaplan and Norton, 2000).

Kaplan and Norton (1996, 2000) propose to use the Balanced Scorecard not only as a tool to communicate and follow up the strategy to be realized, but also as a basis for evaluating and rewarding managers. Rewarding managers on the basis of the Balanced Scorecard is consistent with the goal of creating a better 'strategic alignment' (Kaplan and Norton, 1996). Later, Kaplan and Norton (2000) found that of 15 companies using the Balanced Scorecard 13 have linked their remuneration system to the Balanced Scorecard.

Until now little research has been conducted concerning the effectiveness of remuneration systems based on the Balanced Scorecard. Kaplan and Norton (2000) call BSC-based remuneration 'the Balanced Paycheck', they describe a number of case studies and give a few practical recommendations for the implementation.
They recommend:

- to link the remuneration of managers not too quickly to the Balanced Scorecard, due to the fact that the first scorecards are only preliminary and the reported performance data are still insufficiently reliable in a first phase.
- to base the remuneration of managers especially on objective (output) measures instead of subjective (behavioral) measures.
- to remunerate managers to a limited number of Balanced Scorecard measures.
- to find a balance between measures for individual performance and team performance.
- not to link remuneration to the Balanced Scorecard if the measures need to be frequently adapted in a fast changing environment.

Apart from these practical suggestions the authors do not draw any generalizable conclusions about the effectiveness of BSC-based remuneration systems. They state: "the only generalizable finding from all of the company's experiences in linking compensation and reward to Balanced Scorecards is that they do it" (Kaplan and Norton, 2000, p. 265).

The objective of this study is to explore the relationship between BSC-based remuneration systems and the performance motivation of operating managers. More specifically the following research questions are studied:

- Does BSC-based variable remuneration lead to increased performance motivation of operating managers?
- Which are the factors that influence this motivational impact?

2. Literature review

In designing a variable remuneration system, companies should decide on a number of important design parameters (Bruggeman and Slagmulder, 1997), these are:

- the choice of the performance measures that will be used as a base for the evaluation of the manager,
- the method of setting targets or standards,
- the method of rewarding managers,
- the method of bonus calculation,
- the method of bonus payment.

For each of these parameters one can choose between a number of possibilities. For example, as a basis for bonus allocation the emphasis can be placed solely on the realized financial performance or also on the non-financial performance of the manager. There is also the choice of assessing the performance of the manager by (not) making use of standards or targets. These targets can be easily achievable or challenging. With regard to positive appreciation the manager can be rewarded by means of non-financial rewards, by creating promotion opportunities, by assigning a bonus or a variable remuneration in relation to the measured performance. The bonus can be determined discretionary or calculated according to a bonus formula. Financial rewards can be paid in the form of cash or stock options.
So, when designing a reward system management has a range of possible choices. Little research has been conducted about the effectiveness of the different design choices in relation to the use of the Balanced Scorecard. The Balanced Scorecard in fact is a specific way of determining performance measures for remuneration of managers.

Lipe and Salterio (2000) studied how common and unique measures in business unit scorecards affect superiors' evaluations of the unit's performance but did not focus on the impact on the performance motivation of subordinate managers.

With regard to the linking of variable remuneration to the Balanced Scorecard, from an agency theoretical viewpoint, it is expected that this linking will have a positive effect on the performance motivation of managers.
Holmstrom and Milgrom (1991) show analytically that agents' decisions are affected by items that are included in their performance evaluation and compensation. They also show that items not included in evaluation and compensation of an agent will have little effect on the agent's decisions. By using variable remuneration the interests of the subordinate managers (financial remuneration) are best aligned with the interests of top-management (financial performance of the company or business unit in the short term as well as in the long term.)

Field research of Banker, Lee and Potter (1996) reported a positive incentive effect of a performance-based compensation plan on the sales of a retail establishment. Banker, Potter and Srinivasan (2000) found that the use of non-financial performance indicators as a basis for rewarding managers resulted in an improvement of the financial and non-financial performance.

Furthermore the target setting literature suggests that performance control should be based on challenging but attainable targets. Locke and Latham (1990) proved by means of various experiments that managing on the basis of difficult goals led to a better performance.
At the other hand the same literature shows that setting difficult targets is not effective in all situations. Locke and Latham showed that the effect of difficult targets depends on the degree of complexity of task and on the ability and commitment of the manager. When carrying out complex tasks, specific and difficult performance goals are sometimes experienced as inconvenient (Early, Connolly and Ekegren, 1989, Huber 1985).

As complex tasks are considered those tasks for which goals have to be achieved in different performance dimensions at the same time (e.g. tasks for which the focus lies on quality and quantity at the same time) and/or tasks for which the manager has to develop specific strategies in order to achieve his goals (and therefore can no longer satisfy himself by making more efforts). For these tasks Gilliland and Landis (1992) proved that, when difficult goals are formulated simultaneously on quantity and quality performance variables, persons do not succeed in achieving their goals in both result areas, and they preferred the quantity goals at the expense of quality. Similar behavior was noticed in target costing processes where product developers were set targets with regard to the creativity of their developed product, the development time and the product cost (Everaert, Boër and Bruggeman, 2000).

Managing performance by means of the Balanced Scorecard can also be considered a rather complex task. Target setting in the Balanced Scorecard requires the manager being confronted with simultaneously directing various performance indicators to goals in the short term, for which there exist between the different critical success factors interdependencies hypothesized by the manager and for which the manager has to develop specific strategies in order to achieve his goals. If directing on the basis of the BSC can be considered a complex task, it can be expected that one will have to be aware of the fact that managers will not be urged to formulate challenging goals for all critical performance measures.

Also bonus systems are not found to be effective in all situations. It is known that pay for performance and bonus systems in general are expected to be less effective and bonus systems even may fail when (Anthony and Govindarajan, 1992):

- managers cannot influence their performance in the short term (e.g. when performance is largely determined by major corporate strategic decisions).
- not much responsibility is delegated to lower level managers.
- the performance measurement system is unreliable,
- performance is largely determined by first line workers and employees.
- top management does not use the system in a consistent way.

It is likely that one or more of these situations also may occur in performance measurement in a BSC environment.

3. Research method

As discussed before the research questions of this study are:

- Does BSC-based variable remuneration lead to increased motivation to perform of operating managers?
- Which are the factors that influence this motivational impact?

A case study will be conducted to investigate these research questions. The case study has an exploratory purpose aiming for theory building on this subject. In a first phase of this study we start with one research site. Qualitative interview data will be obtained from managers rewarded under a BSC-based system. In addition to the interviews, we will use a questionnaire to a larger group of managers in this same company, in order to complement our results with quantitative data. Finally we will formulate some hypotheses concerning the effectiveness of a BSC-based variable remuneration system.

We took in-depth interviews with the country manager as well as with 7 middle-level managers. Among the middle-level managers, there were 3 production unit managers, 1 performance coach and 2 staff members. These managers had at the time of the interview at least one year of experience with a BSC-based remuneration system. They all experienced the complete introduction of this new variable pay system.

During the interview sessions the managers were asked if they felt more motivated after the implementation of the new remuneration system to contribute to the realization of the goals and the strategy of the group. When the experience was positive, we asked which aspects of the BSC and the reward system were the major sources of their motivation. In case of a negative experience the sources of demotivation were examined, and the perceived weaknesses of the reward system studied.
Furthermore the interviewed managers provided us with all the necessary internal documents, which describe further details of the BSC and the related pay system.

4. Description of the Research Site

The research site is a Belgian manufacturing division of a Danish Corporate Company, abbreviated further as the DC Company. The DC Company is a leading producer of polyolefin plastics: polyethylene (PE) and polypropylene (PP). PE and PP products from the company can be found in countless applications – from food packaging and personal hygiene, to construction materials, houseware, cars, aircraft, pipes and cables.
Besides Belgium, we can find also manufacturing sites in Austria, Finland, Germany, Norway, Portugal and Sweden, plus compounding units in Brazil, France, Italy and the USA. The Belgian site consists of three manufacturing locations with a total production of 900.000 tons polyolefins in 1999.
The Company's strategy is to be a leader in issues affecting health, safety and environment (HSE). Management believes in a Zero Mindset, which means the determination to achieve zero work-related accidents, injuries and illness, and the steady reduction of plant emissions. DC Company has high ambitions in setting challenging targets. They see only one way of winning – and that is with, and through, their people.

5. Description of the Balanced Scorecard and the Variable Pay System

Purpose of the BSC

DC Company considers the Balanced Scorecard as a control tool for monitoring and steering the drivers of ultimate financial performance. Management has translated the business strategy into operational objectives and targets and the BSC is used across the company to communicate objectives and performance**.**

The most important aim of introducing the BSC in the Belgian manufacturing division was to improve goal orientation. Before the BSC the company listed more than 100 initiatives for goal orientation. The first attempt to improve goal orientation was in January 1998. A few members of the management team agreed to cluster the initiatives and to group them into larger objectives. The first approach to become more goal-oriented was inspired by the EFQM-model. Since the EFQM-model is not a performance measurement system, the Corporate Company launched the BSC in the third quarter of 1998.

Furthermore the BSC is used as an instrument for evaluating and compensating executive functions. The BSC is, in other words, the starting point for a variable pay system.

Structure of the BSC

Kaplan and Norton's BSC contains measures of performance in four areas, i.e. financial success, customer value, efficient internal processes, learning and growth. The DC Company has arranged its measures in categories that reflect its own priorities and culture. The four scorecard areas in this Company are 'Responsible Care', 'Manufacturing', 'Customer' and 'People'.

The responsible care perspective contains performance measures for health, safety and environment. The manufacturing perspective contains performance measures that represent the degree of efficiency of internal processes. The key performance indicators in the customer perspective measure customer satisfaction. The key performance indicators in the people perspective are measures for the learning and growth-capacity.

A summary of the measures currently used in the BSC of DC Company is shown in exhibit 1.

Exhibit 1: The Balanced Scorecard of DC Company

Perspective	KPI manufacturing division	Aim
Responsible care	TRI Frequency[1]	No injuries
Responsible care	Sick leave	Well-being
Responsible care	VOC reduction[2]	No emissions
Manufacturing	Fixed cost	Profitability
Manufacturing	Manning	Profitability
Manufacturing	PO cash cost[3]	Profitability
Manufacturing	Operability	Profitability
Manufacturing	% FTR[4]	Profitability
People	Sickness	Motivation
People	Training days	Multi-skilling & teaming up
Customer	On time delivery	Satisfied customers
Customer	Claim frequency	Satisfied customers

[1] TRI : total recordable injuries
[2] VOC : volatile organic compounds
[3] PO : polyolefin
[4] FTR : first time right

It is very important to note that DC Company used a top-down approach; the BSC was developed centrally (on site level) and assigned to division level without initial input from the divisions.

Organizational alignment to the BSC

The BSC has been translated in an organizational model. Next to the site leader, the site leadership team is composed of three location leaders and four performance coaches. We count three location leaders since the site consists of three locations. The location leaders' main attention goes to the social structure at their location. We count four performance coaches each working on one perspective of the BSC. The role of a performance coach is to ensure that the corporate initiatives are prioritized, to ensure that benchmarking data are available on their field of expertise and to identify best practices. Performance coaches obtain a deep understanding of the key drivers affecting a selected strategic area, they benchmark the results within the comparative industry and they steer the organization towards superior performance. As all four performance coaches have a similar role there is the risk of inhibiting each other. Regular alignment meetings, as well as the collective responsibility for the entire BSC should ensure mutual enforcement, rather than competition.

BSC-based variable pay system

The BSC performance is used as the basis of a variable pay system. The measures or KPI's for the variable pay system differ little from the BSC measures.

At the moment of the study, the DC Company used the variable pay system only for compensating higher level functions. However, DC Company has the intention to cascade this variable pay system also to lower level functions. The Company chose for the soft version of BSC-based variable pay system since the variable pay as percentage of yearly salary is determined by the corporate performance on the key performance indicators. In this way they try to stimulate corporate thinking and they try to impede competition between the different locations. Of course, this kind of linkage also has the consequence that the whole organization is penalized when one location performs really badly.

The BSC-based variable pay system is built on eight KPI's. Each KPI is weighted. The weights are 10 % at least, since management is convinced that a smaller weight will distract manager's attention.

A summary of the measures and the weights currently used in the pay system is shown in exhibit 2.

Exhibit 2: BSC performance measures used for the variable pay system

Perspective	KPI-parameter	Weight
Responsible care	**LTA-frequency (number of LTA's)**	**10 %**
Responsible care	**Sickness (% or total number of days)**	**15 %**
Manufacturing	**Fixed costs (MBEF)**	**15 %**
Manufacturing	**Non-FTR volumes (tonnes)**	**10 %**
Manufacturing	**Lost PO-volume (tonnes)**	**15 %**
Customer	**Complaint frequency (%)**	**10 %**
Customer	**On-time delivery (%)**	**10 %**
People	**Two days on teaming-up & multi-skilling (number of workers)**	**15 %**

The following formula is used to determine variable pay as a percentage of yearly salary:

Variable pay as percentage of yearly salary = 7 % of yearly salary (in year 2000) * performance index parameter (%)

As we see, the formula consists of two factors. Only the performance index parameter can be influenced by corporate performance since the performance index parameter is a function of the actual results on the measures or KPI's. The performance index parameter (%) is the sum of contributions of each key performance indicator. The contribution of each key performance indicator is the product of 'weight of each KPI' and a 'result factor'. The result factor is calculated by a program in function of the 'actual result' versus the 'borders' or 'thresholds'. DC Company has defined four borders. Border 1 corresponds with a degree of target realisation of 70%; border 2 corresponds with a degree of target realisation of 90%, border 3 corresponds with a degree of target realisation of 110% and border 4 corresponds with a degree of target realisation of 130%. These 4 borders correspond with 5 performance levels or thresholds. Performance level 2 is between border 1 and border 2; performance level 3 is between border 2 and border 3; performance level 4 is between border 3 and border 4. There is a higher result factor for a higher performance level. The chart below shows the relation between the degree of target realization (border, performance level) and the result factor:

Exhibit 3: Performance thresholds used in the calculation of the variable remuneration

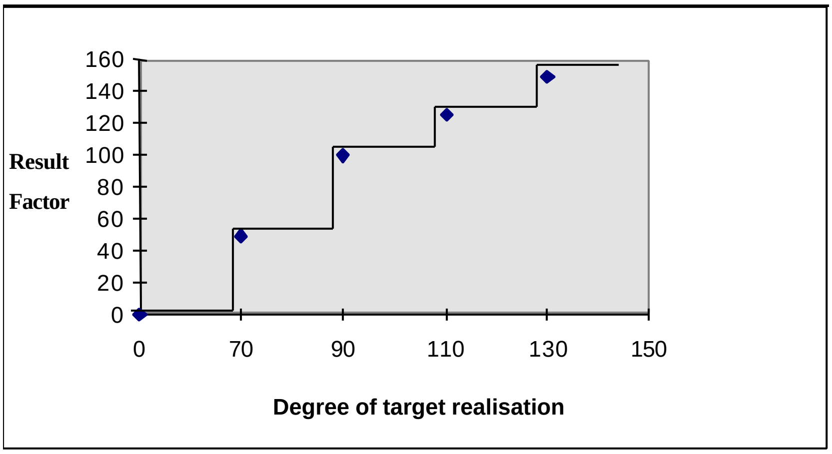


Exhibit 4 is an illustration of the calculation of the performance index parameter. Assume that actual result on LTA-frequency[5] is 2,8. This score is situated between border one and two. This position corresponds with performance level 2 showing a degree of target realization between 70 % and 90 %. We can read the result factor from the chart: the result factor amounts to 50 %. The contribution of LTA-frequency to the performance index parameter is 5 % given that the weight for LTA-frequency is 10 %.
If we repeat this procedure for each key performance indicator, we are able to calculate the performance index parameter.

[5] LTA : lost time accidents (arbeidsongevallen met werkverlet)

Exhibit 4: Variable remuneration calculation system

KPI-parameters	Weight	border1	border2	border3	border4	actual result	Result factor %	Total (%)
LTA-frequency	10 %	3.5	2.6	2.4	1.5	2.8	50	5
Sickness	15 %	3.5	3	2.85	2.65	3.37	50	7.5
fixed costs	15 %	3461	3436	3426	3401	3464	0	0
non-FTR volumes	10 %	48000	45000	43000	40000	45241	50	5
lost PO-volume	15 %	55000	52500	49000	47000	58212	0	0
complaint frequency	10 %	0.325	0.307	0.301	0.285	0.342	0	0
on-time delivery	10 %	95.5	95.8	96.2	96.5	94.7	0	0
two days on teaming up & multi-skilling	15 %	70	80	88	92	79	50	7.5

Performance Index Parameter (%)	= 25,00
Variable pay % of yearly salary (max 7 %)	= 1,75

6. Results of the analysis of the interview data

The interview data revealed that the link of the variable pay system to the Balanced Scorecard only had a minor impact on the motivation of the operating managers to perform better. However, the managers admit that the implementation of the Balanced Scorecard had positively affected their motivation but the major source of motivation was not due to the variable pay. The positive motivational effect mainly came from the visioning process, and by the design and use of the Balanced Scorecard as a tool to monitor the implementation of strategy and to measure the departmental progress. Another interesting result was that the managers felt that the motivational impact of the visioning process was larger than the one generated by the use of the Balanced Scorecard.

Managers experienced that having a clear view on the future direction of the company is the most important source of motivation. When there are no clear goals for the future, managers will be less willing to spend energy on improvement programs, because they feel their efforts are not really meaningful. The advantage of the visioning process of the Balanced Scorecard is that goals and strategies are clearly communicated and people get a clear vision on the future.
One manager working for a unit organized as a joint venture with another chemical company felt more job tension after the implementation of BSC-based variable pay. The basic reason for his dissatisfaction was the fact that the management team of the joint venture could not reach consensus about the goals and the strategy. One joint venture partner wanted to organize operations for low cost; the other partner stressed the ability to produce large volumes as a critical success factor. In this industry, producing large volumes does not lead to low cost. To produce large volumes it is necessary to clear large amounts of polluted propylene and this leads to an increase in cost. The lack of vision of the management team was his major concern and it became a source of demotivation. This manager did not have a sense of direction, he was not interested in spending much effort on measuring performance using the Balanced Scorecard and his frustration could not be mitigated by bonus payments. He stated:

> ‘The 7% variable pay I can get for achieving my targets is not an important driver of my motivation. I want to do the right things for my company, but I just want to know the direction we want to go into!’

Also the use of the Balanced Scorecard as a tool for monitoring progress and the implementation of strategy was perceived as a major source of motivation. One operating unit manager added the following comment:

> ‘With our Balanced Scorecard we now have the opportunity to discuss the evolution of the performance of the unit in our team, discover the problem areas and decide on actions. The Balanced Scorecard shows us the impact of our actions on a systematic basis’.

Managers had mixed feelings with regard to the variable pay. On the one hand, when the performance targets were met, they considered it as fair to receive a bonus. As stated before the variable pay was not their major source of motivation because some managers felt that the percentage of variable pay was set too low. At the other hand, when the performance targets were not met, they considered it as unfair not to receive a bonus. Some managers felt that this was unfair and that this led to significant demotivation and frustration. The following reasons for frustration were mentioned:

- Some performance indicators in the Balanced Scorecard were not precise measures of the objectives to be realized.
- Important performance measures in the Balanced Scorecard could hardly be influenced by the managers.

If some performance measures in the Balanced Scorecard do not precisely measure the critical success factor, the balanced Scorecard may give falls alarms to management or show performance below target while in reality the true performance is perfectly under control. When the BSC is only used for monitoring performance as a basis for diagnosis and action planning in the unit management team, team members may bring up the measurement flaws and correct the picture. When the BSC is used as a basis for determining the variable remuneration, measurement errors quickly hurt individual persons, which too much triggers emotional debates in the organization.

A second important factor of concern was the lack of controllability of performance measures in the Balanced Scorecard. One major reason why unit managers perceived the performance measures as partly uncontrollable was the fact the variable pay was based on the Balanced Scorecard of the site, to which the unit belonged. So managers on a certain level of the organization were evaluated based on the scorecard of the higher organizational level. Top management and the Human Resources department had explicitly chosen for this design characteristic because it was expected to stimulate cooperation across functions and operating units. They believed that managers would be more motivated to exchange knowledge and experience which would positively affect continuous improvement. The consequence of this design characteristic was however that individual managers had a minor impact on the team scorecard. It happened that the whole organization got penalized when one location had a very bad performance. This dysfunction was felt most in staff functions. One manager of industrial and plant engineering did not receive a bonus because the site for which he worked had not reached the performance targets in the Balanced Scorecard. He felt himself treated on an unfair basis because all the projects for which he had been responsible had been successful.

From a motivation viewpoint he felt that it would be more optimal to calculate his variable remuneration on the basis of a scorecard specifically designed for his department (the engineering Balanced Scorecard). When this scorecard would be derived from the engineering strategy, aligned with the unit and the site manufacturing strategy, linking variable pay to the BSC would also for his department create the necessary strategic alignment and the performance indicators would be more controllable on the departmental level.
Operating managers felt that the linkage of the variable remuneration to the Balanced Scorecard did not really stimulate them to improve cross-functional and interdepartmental cooperation. They believed motivation for cross-functional activities should come from other coordinating mechanisms in the organization (e.g. job rotation).

A second situation in which managers complained about the lack of controllability of performance measures was that they felt the performance could only be influenced in the medium or the long term. Assume 'sickness' is a good measure of employee satisfaction, it may take two or more years to improve it.

Another instance where managers perceived a lack of controllability occurred when the portion of noise inherent to the performance variable was too high, specifically when the average event count per period was low. For example in a small unit, where the average number of sickness days is very low one accidental sickness period of one of the workers may cause the performance measure to drop below target, although management care and employee satisfaction were perfectly under control.

Besides, during the interviews managers also expressed in general their positive feeling about the target setting process underlying the remuneration system. One performance coach commented:

> 'The positive aspect of our system is that managers are invited to work towards targets and to work out benchmarks for their performance'.

On this point they mentioned also some interesting experiences. The introduction of the BSC and the variable pay system coincided with a change of corporate parent. Before, the DC Company was a division of an Austrian Company. Now it is acquired and controlled by a Danish company. The Austrian Company's governance process was based on top down set realistic performance targets of which the achievement was monitored using a tight control leadership style. The target setting process of the Danish company is based on bottom-up challenging targets monitored under a coaching leadership style. Unit managers felt that the new approach was much more motivating then the former one. When using the Balanced Scorecard they found it very motivating that they could actively participate in determining the targets of the different performance measures. In their target setting process most managers concentrated efforts on a limited number of performance indicators. They felt they could not be challenged on all indicators at the same time.

7. Questionnaire data

After the interview sessions and analysis of the interview data we collected questionnaire data on a number of important perceptions revealed by the interviews. For this purpose we distributed a questionnaire to 60 operating managers and obtained 30 usable responses. By the questionnaire we wanted to learn if the expressed experiences concerning the BSC and the

BSC-based remuneration system were supported by the majority of the operating managers and which type of manager supported which type of experience.

Below (in Exhibit 5) we present a summary statistics of the support given to the different perceptions.

Exhibit 5: Support of Perceptions in the interview data

Revealed perceptions	agree	not agree
Sub sample unit managers and technical staff people (n = 23.)		
• motivational impact visioning process + BSC > BSC var. pay	92 %	8 %
• motivational impact bottom-up target setting > top down	82 %	18 %
• motivational impact of challenging Targets + coaching	99 %	1 %
• less motivational impact of BSC var. pay when KPIs frequently change	70 %	30 %
• managers concentrate target setting on a limited number of KPIs	86 %	14 %
Sub sample Performance coaches and HR people (n = 7)		
• motivational impact visioning process + BSC > BSC var. pay	95 %	5 %
• motivational impact bottom-up target setting > top down	86 %	14 %
• motivational impact of challenging Targets + coaching	86 %	14 %
• less motivational impact of BSC var. pay when KPIs frequently change	84 %	16 %
• managers concentrate target setting on a limited number of KPIs	86 %	14 %
Total Sample (n = 30)		
• motivational impact visioning process + BSC > BSC var. pay	93 %	7 %
• motivational impact bottom-up target setting > top down	86 %	14 %
• motivational impact of challenging Targets + coaching	96 %	4 %
• less motivational impact of BSC var. pay when KPIs frequently change	79 %	21 %
• managers concentrate target setting on a limited number of KPIs	86 %	14 %

8. Hypotheses formulation and model identification

The research results reveal that the quality of the visioning process is a major source of motivation in a BSC-based variable remuneration system. From these findings we can formulate the following hypothesis:

> *H1: The higher the quality of the visioning process, the higher the performance motivation.*

This finding is consistent with the experience of Kaplan and Norton (1996, 2000) stating the BSC is not primarily an evaluation method, but also a tool to describe and communicate strategy and to translate strategy in concrete operational terms. Also Merchant (1989) found that failure to communicate is an important cause of poor organizational performance.

The data reveal that also the use of the Balanced Scorecard on itself, to monitor strategic performance is a strong motivator for performance. By using the scorecard managers receive feedback on the evolution of their performance, have an opportunity to discuss problem areas in an interactive way and plan improvement actions. The collected evidence in our case study leads to a second hypothesis:

> *H2: The higher the quality of the use of the Balanced Scorecard, the higher the performance motivation.*

The motivational impact of the use of the Balanced Scorecard itself is in line with the proposition of Flamholtz (1980) who stated that an important function of a measurement process is to serve as a 'catalyst function', to produce systematic planning and that the presence of a measurement process influences motivation, independently of the numbers which are derived. Flamholtz cites the work of Cammann (1974) who studied the impact of a feedback system on managerial attitudes and performance and found that measurement motivated managers to concentrate their efforts in areas where the results were measured.

In their field study on the effectiveness of the Balanced Scorecard as a device for communicating and controlling strategy, also Malina and Selto (2001) found evidence to support the first two hypotheses. They state: 'We find evidence that managers respond positively to BSC measures by reorganizing their resources and activities, in some cases dramatically, to improve their performance on those measures. More significantly, they believe that improving their BSC performance is improving their business efficiency and profitability.'

A third factor influencing motivation is the target setting process. From the data we deduct the hypothesis that using appropriate target setting has an important impact on performance motivation. This leads to the third hypothesis:

> *H3: The higher the quality of the target setting process, the higher the performance motivation.*

Important dimensions of the factor quality of target setting are the extent to which managers are allowed to participate in setting the targets, they actively use benchmarking, they use difficult targets and focus on a limited number of performance measures. This last dimension is consistent with goal setting theory (Locke and Latham, 1990), showing that difficult targets lead to higher performance.

The data also reveal that the type of leadership style and the controllability of performance measures moderate the motivational impact of the quality of target setting. Controllability is defined as the extent to which managers can influence performance in the short term (this means during a time span shorter than the performance evaluation period used in the variable remuneration system). Here we propose the following hypotheses:

> *H4: The more management uses a coaching leadership style, the stronger the impact of the quality of target setting on performance motivation.*

> *H5: The higher the controllability of performance measures, the stronger the impact of the quality of target setting on performance motivation.*

On the linkage between the variable remuneration and the Balanced Scorecard, we can deduct a number of hypotheses. A first one is on the effect of the percentage of variable pay:

> *H6: The higher the level of dependence of the variable remuneration on the BSC, the higher the motivation to perform.*

Managers experienced the BSC-based variable pay system as having a minor impact on their motivation. One reason was that the percentage of variable pay was too low. This showed that managers considered the variability percentage as a moderating variable.

Other reasons for the negative feelings about the variable pay system had to do with other moderating factors that in this specific case probably neutralized the impact and even created negative performance motivation effects.

Evidence in our data show that the main effect of variable pay is also moderated by the level of consensus about goals and strategies, the precision of the performance measures, the reliability of the performance data, and the controllability of the performance measures by managers. Consequently, the following hypotheses may be formulated:

> *H7: The higher the level of consensus about the goals and the strategies, the higher the motivational impact of variable remuneration.*

> *H8: The higher the precision of the performance measures in the BSC, the higher the motivational impact of variable remuneration.*

> *H9: The higher the controllability of the performance measures, the higher the motivational impact of variable remuneration.*

Hypothesis *H8* is consistent with Anthony and Govindarajan (1995). We expect that the motivational impact of variable remuneration is positive when performance measure precision exceeds a certain threshold level. Below this level the impact on motivation is expected to be zero or negative.

Hypothesis *H9* stresses the importance of controllability also in a Balanced Scorecard environment. Also this is consistent with earlier management control research (Merchant, 1989, Anthony and Govindarajan, 1995).

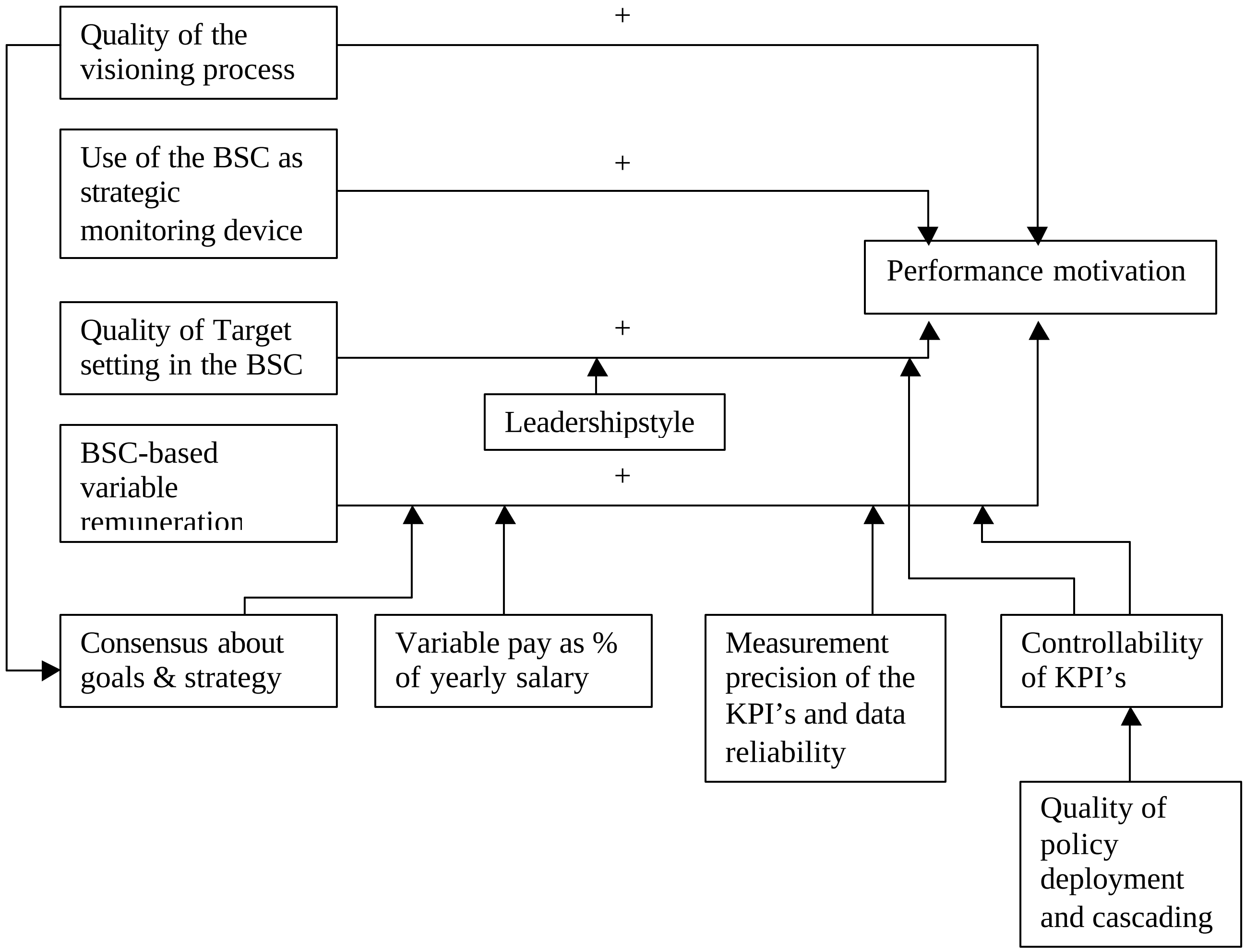
Our data also reveal evidence to support a hypothesized relationship between controllability and the quality of the policy deployment and cascading of the Balanced Scorecard. Here we propose the following hypothesis:

> *H10: The higher the quality of the policy deployment and cascading, the higher the controllability of the performance measures*.

Quality of policy deployment and cascading is defined by the extent to which the Balanced Scorecard used as a basis for variable pay calculation of a unit- or staff function manager is derived from a unit strategy or staff function strategy, both derived from higher level business strategies and the corporate strategy. Quality is low when the Corporate Balanced Scorecard is pushed down from the top to lower levels in the organization to be used as a basis for performance evaluation and no deployment of strategy takes place.

The hypothesized relationships can be integrated into the following model (see exhibit 6).

Exhibit 6: Supported Model of the performance motivation effect of a BSC-based variable remuneration system.



9. Conclusions

Our findings show that, at least for one research setting, linking variable remuneration to the Balanced Scorecard only has a minor additional impact on the performance motivation of operating managers. The process of the Balanced Scorecard influenced motivation most through the visioning process, the use of the scorecard as a strategic control tool and through target setting and benchmarking.

The research results draw our attention to the fact that a potentially positive impact of BSC-based variable remuneration is probably strongly moderated by the following variables:

- the percentage of the variable pay,
- the level of consensus about goals and strategies,
- the precision of the performance measures,
- the controllability of the performance measures in the BSC.

From a motivational point of view, managers are in favor of working with challenging targets under a coaching leadership style. The results also stress the importance of the quality of strategy deployment and cascading during the implementation process in order to maximize the controllability of the performance measures.

Our conclusions are in line with some of the practical recommendations of Kaplan and Norton about the Balanced Paycheck (Kaplan and Norton, 2000, chapter 10):

- They recommend to implement the link between variable remuneration and the BSC not too soon in the process, implicitly due to the fact that the first performance measures are not sufficiently precise and the data are not reliable enough.
- They also suggest using objective (output) measures instead of subjective measures. This is consistent with our hypothesis about the effect of performance measure precision.
- They also recommend using a limited number of performance measures. This is in line with goal setting theory that considers task complexity as a moderator for the performance effect of difficult targets.
- They also recommend a good balance between measures for individual performance and team performance. This recommendation is consistent with our hypotheses about the impact of quality of strategy deployment and cascading and implicitly suggests that linking variable remuneration to a scorecard of a higher level in the organization moderate the motivational effect of the remuneration system.

10. Limitations and suggestion for further research

The formulated hypotheses came from a case study research in one company, which forms a first limitation of this study. Further research in other settings may confirm the above stated hypotheses or identify new factors and other types of interaction, and enrich our insights.

Furthermore, the formulated model needs to be tested on a broader basis by further research.

Finally, some variables from previous research were not found in this study, e.g. we could not observe the motivation effect of factors like inconsistent use of the variable remuneration system by top management, degree of centralization of responsibility (factors suggested by Anthony and Govindarajan, 1995) and rate of change of strategy (environmental factor suggested by Kaplan and Norton, 2000).

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