

The moderating role of leadership in the relationship between management control and business excellence

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This study deals with the moderating role of leadership in the relationship between management control as part of total quality management (TQM) and business excellence in terms of purposive change. Data were collected via a survey filled out by managers working at 44 locations in the Correctional Services sector of the Correctional Institutions Agency (DJI) in the Netherlands. A total of 618 responses (83%) were obtained. Our hypothesis was derived from a conceptual model and tested using Pearson's *r* as an effect size index. The results show strong relations between the dimensions of management control and the styles of active leadership, on the one hand, and between the management control dimensions and business excellence in terms of purposive change, on the other hand. The results also indicate that transformational leadership is the most influential factor in the relationship between the management control construct and purposive change. It is concluded that organisations are strengthened by a management control system which is applied in combination with an intensive management communication approach in a context of transformational leadership. These findings have important implications for the further research on interventions in management control as part of TQM.

Keywords: performance management; management control; leadership; purposive change

1. Introduction

Within the body of scientific literature, the relevance of management control systems in order to achieve business excellence in terms of purposive change has been widely acknowledged (Burns & Vaivio, 2001). Ford and Greer (2005) observe a strong relationship between the use of management control systems based on outcome monitoring and implementation success. A topic which has remained underdeveloped in the literature, however, concerns the interaction effects between the management control system and its users on organisational outcomes (Abernethy, Bouwens, & Van Lent, 2010; Hartmann, Naranjo-Gil, & Perego, 2010).

Soltania, Singhb, Liaoa, and Wang (2010) emphasise the importance of management control systems for a total quality management (TQM) approach. Management control, as part of TQM, involves the whole spectrum of activities aimed at formulating an organisation's annual plan, translating it to the organisational units, and monitoring as well as adjusting it. Although it has for a long time now been recognised that management control can make an important contribution to an organisation's management of

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change, this topic has remained a subject of frequent debate (Neely et al., 2007). Neely (2005) identifies four bottlenecks in applying management control systems associated with business excellence in terms of purposive change: (1) the desire to make (as many as possible) performance items measurable, (2) the formulation of a performance measurement approach from the perspective of only one of the various functional fields, (3) the lack of insight into the relations between results and actions, and (4) the inaccessibility of the information required. We see two more bottlenecks: (5) the lack of a participative approach and (6) negative experiences with respect to management dialogues, which can be seen as social psychological and leadership bottlenecks, respectively. In line with these bottlenecks, Fandray (2001) identifies a need for a more continuous form of leadership interaction through a dialogue between the management levels and the employees about the organisation's performance. In this dialogue, feedback has to be exchanged and information shared more intensively about the organisational members's contribution to the business strategy. Here, the managers' leadership skills in asking for and giving feedback are of the utmost importance, with respect to both the participative leadership style and the realisation of a climate of learning (Aguinis & Pierce, 2008).

Our research objective has focussed on demonstrating the interaction between management control and leadership in connection with the organisational concepts of business excellence required for implementing changes in a goal-oriented and purposive manner, as proposed by Ten Have, Ten Have, Stevens, Van der Elst, and Pol-Coyne (2003). Our research is in line with a study presented by Neely (2005) on dynamic and flexible rather than static performance measurement systems.

This paper is structured as follows. In the next section, we formulate the conceptual model and The Hypotheses. Section 3 describes the methods used for answering the research questions. Section 4 demonstrates the results of the empirical research, and finally, in Section 5, we present our conclusions and propose some topics for discussion.

2. Theory and hypotheses

The intended effects of management control as part of a TQM approach are reflected in four concepts for business excellence: 'direction', 'consistency', 'coherence', and 'feedback' (Ten Have et al., 2003). Management control itself is defined in terms of 'performance management', 'management communication', and 'management information'. Leadership is, according to Bass (1985), subdivided into transformational and transactional leadership, and a contra-variable named passive leadership. It is assumed that the contextual variable 'leadership' moderates the relations between the three management control dimensions and the intended effects on business excellence. In the following subsections, we consecutively underpin our theoretical justification of the model as presented in Figure 1.

For the theoretical justification of the model, we used the graphics and guidelines for theory-consistent empirical management accounting research as proposed by Luft and Shields (2003). Based on their guidelines, we defined the variables presented in Figure 1 and the causal model form. In addition, we adopted a single-level study approach: evidence was gathered from individuals while we conducted our research on the organisational level, which means that we calculated the averages of the organisational members' scores on the variables used in this study.

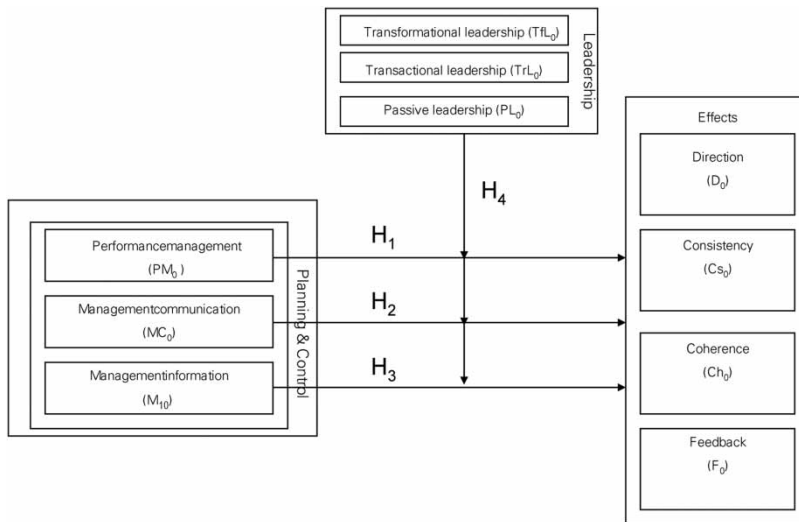


Figure 1. Conceptual model and hypotheses.

2.1 Business excellence concepts of organisations which are successful in implementing changes in a goal-oriented and purposive manner

Ten Have et al. (2003) have focussed on the question why, in particular, large complex organisations are capable of realising longer term change in a goal-oriented and purposive manner. Their research was based on the EFQM cases of an earlier study entitled: 'The European Way to Excellence' (Hardjono, Ten Have, & Ten Have, 1996). Ten Have formulated four guiding concepts as the basis for a distinctive approach to organising: direction, consistency, coherence, and feedback.

Clarity of *direction* refers to an organisation's common vision and its choices in terms of strategy and paths set. Vision and strategy create focus. *Consistency* refers to the translation of the common vision and success factors from one management level to the next. Then, the vision and success factors are converted into performance indicators and concrete objectives on the different management levels. In this way, each manager should be able to perceive how his/her individual contribution fits the greater whole. *Coherence* concerns the horizontal attunement among processes, chains, sectors, departments, and individuals. Breaking the boundaries between departments or sectors is central here. *Feedback* entails structuring organisations in such a manner that people are being given the opportunity to learn at all levels and at all different time intervals (daily, weekly, monthly, and yearly).

As part of this study, the concepts of business excellence were further elaborated in the items included in our validated questionnaire. It was expected that the interaction between the dimensions of management control and the styles of leadership would show a connection with these concepts.

2.2 Management control

Anthony (1988) defines management control as: 'the process by which managers influence other members of the organization to implement the organization's strategies'. A term related to management control is 'planning and control'. Planning is the process of defining the organisation's objectives and the actions to realise them. Control concerns the tasks

of measuring and managing based on the comparison of factual results and objectives. In our view, the terms management control and performance management are congruent with the term planning and control and form part of the TQM approach. Anthony and Govindarajan (2003) distinguish three clusters of activities in this process: (1) planning, resource allocation, and the coordination of activities, (2) communication of the goals and objectives, an interactive monitoring of these goals and objectives, and influencing people in their performance, and (3) evaluating and monitoring information and taking decisions (and action) in a corrective or preventive manner. Flynn (2007) proposes three similar categories by arguing that management control in the public sector can be divided into three areas of interest: activities related to policy deployment, management communication, and management information. In brief, three variables are considered as central in management control: performance management (Section 2.2.1), management communication (Section 2.2.2), and management information (Section 2.2.3). Based on these variables, this study has investigated the interactive style of using management control systems (Simons, 1995; Widener, 2007) to achieve purposive change.

2.2.1 *Performance management*

Neely, Adams, and Kennerley's (2002) definition of a performance management system indicates that it is a 'balanced' system. Organisational performance can be made explicit from the perspective of strategic objectives or on the basis of the interests and expectancies of owners and other stakeholders. The role of a management control system is to support managers in optimising the organisational performance for the benefit of both the owners and the stakeholders by means of decision-making, planning, evaluation, and taking action (Merchant & Otley, 2006). This is in line with the goals of a TQM approach; Balbastre-Benavent and Canet-Giner (2011) show how the EFQM Excellence Model facilitates strategy formation and strategic capability. Others emphasise objectives such as continuous improvement (Neely, Gregory, & Platts, 1995), the deployment of a strategy (Kaplan & Norton, 1996), managerial development (Garengo, Biazzo, & Betitci, 2005), organisational learning (Kueng, Meier, & Wettstein, 2001), and organisational change (Burns & Vaivio, 2001).

The management control system may be considered as the aorta of an organisation's TQM or performance management mechanism. It can be regarded as a complexity of arrangements formed by the so-called cybernetic planning cycle (Dean & Wellman, 1991): all activities form part of a cyclic planning and control process. In this process, each manager is asked to formulate the targets for his/her organisation (unit) to be realised within a particular time span. During the financial year, the manager is in a continuous dialogue with the next higher manager about issues such as which objectives have and which have not been met (interactive controls). During this process, the causes of failure or success are analysed. On the basis of these learning experiences, the activities are then redefined and adjusted if necessary. Through exchanging the different interpretations of the results, sharing personal experiences, and mutually determining the further courses of action, the changes intended may be realised on a consistent and mutual basis. In this context, consistency applies to a mutual elaboration of the objectives on the different organisational levels (board, division board, location, department, team, process, and individual). Here, the concept performance management is also called 'policy deployment'. Oakland (2011) considers policy deployment and leadership as the backbone of TQM.

Our assumption in relation to performance management is:

H₁: Performance management positively influences the separate concepts direction, consistency, coherence, and feedback as well as the construct as a whole.

2.2.2 Management communication

Management dialogues (vertical communication) or regular work dialogues (horizontal communication) fulfil an important function in the communication of policies and the assessment of their effects (Forman & Argenti, 2005). According to Armstrong and Guimaraes (1998), change cannot be adequately managed without taking account of the interpretations and perceptions of those involved. Perceptions can be influenced and understanding acquired through adequate communication. Brown and Benson (2005) illustrate that a stronger focus on management communication as a form of participation in setting performance objectives leads to an increase in trust in the supervisor as well as in the self-esteem of the managers at the lower management levels. Vertical management communication stimulates the managers at the lower management levels to be more adaptive and take more initiatives. In a similar vein, research by Postmes, Tanis, and De Wit (2001) indicates that vertical communication is more strongly associated with the commitment to purposive change than horizontal communication. That is why in our study we chose to focus particularly on vertical management communication.

With respect to the achievement of organisational goals the dialogue between two management levels requires an open discussion about whether or not the organisation is on the right course. The agenda of this discussion is usually based on the annual plan. Learning from past experiences is important in this context, as well as sharing views on the future as it is expected to unfold (Scharmer, 2007). It is argued that the more frequently (in)formal feedback moments take place, the more effective the feedback is (Cardy & Dobbins, 2005). In addition, feedback is critical to the organisation's learning process and performance development to achieve business excellence (Landy, Farr, & Jacobs, 1982). Our assumption is, therefore, that regular and reliable management communication about issues such as external developments, vision, values, and performance promotes the four guiding concepts:

H₂: Management communication positively influences the separate concepts direction, consistency, coherence, and feedback as well as the construct as a whole.

2.2.3 Management information

In order to optimise the organisation's performance and respond adequately to organisational developments, information technology which addresses the perspectives of the stakeholders is an important prerequisite (Hyvönen, 2007). Information is indispensable in monitoring progress (controlling). Li and Ye (1999) therefore argue that the relation between information provision and performance should be monitored by using a strategic framework. Our presumption is that whenever management information is easily accessible and in line with both the financial and non-financial objectives as formulated in the annual plan, it will favourably influence the organisation's four guiding concepts. This premise has led to the third hypothesis:

H₃: Management information positively influences the separate concepts direction, consistency, coherence and feedback as well as the construct as a whole.

2.3 Effective leadership

For many years now leadership has been a major topic of interest. Den Hartog, Koopman, and Konrad (1999) proposed a framework which stresses the interaction between leaders and followers. It consists of three elements: (i) leadership as a social influencing process; (ii) leadership focussed on the achievement of goals; and (iii) leadership aimed at giving

meaning. In principle, any employee can be a leader. In actual practice, however, leadership is often more specifically associated with the executive managers. Undoubtedly, this can be explained by their formal position, influence, and role model function.

Bass (1985) distinguishes two active styles of leadership: transactional and transformational leadership, as well as a third type (a contra-variable), namely passive leadership ('laissez faire'). Bass and his colleagues have argued that transactional leadership is a necessary precondition for transformational leadership to be effective, as it serves to develop the relationship between the leader and the follower (Avolio, 1999) and offers direction and focus. Without this precondition, transformational leadership would merely lead to confusion and ambiguity. Although a contingency reward is a timely positive response to the achievement of a desired performance, active leadership is generally primarily focussed on tracing mistakes, whereas passive leadership is based on intervention only after problems have become serious. Because Bass' theory can be regarded as evidence-based, we used the styles as defined in his theory in our research. Since the first publication by Bass (1985), more than 650 academic articles on this subject have been published.

The recent publications on leadership especially emphasise the significance of transformational leadership (Zhang, Cao, & Tjosvold, 2011; Zhu, Avolio, Riggio, & Sosik, 2011). According to Bass, transformational leadership consists of four dimensions: charisma, inspiration, intellectual stimulation, and individual attention. A charismatic leader is a leader who has gained the confidence of his/her employees, has a vision, and is respected by his/her staff. Inspiration concerns the communication of the vision and the exemplary function of the leader. A leader who is intellectually stimulating is capable of promoting new ideas and motivating people to evaluate both their work and themselves critically. The category 'individual attention' refers to supporting and coaching the employees as well as giving feedback (Avolio & Bass, 2002). Transactional leadership is based on the costs-and-assets exchange relationship and is generally characterised by target setting, monitoring, and checking the results. This style of leadership is, therefore, also known as 'maintenance leadership' (Den Hartog, Van Muijen, & Koopman, 1997). Passive leadership, on the other hand, concerns avoiding leadership. Passive leaders avoid decision-making or any other involvement in decisions as much as possible, and neither do they commit themselves to giving instructions. In this situation, leadership is in fact absent. In addition, passive leaders avoid strictness in their arrangements, clarifying their expectations, and explicitly defining the objectives and working methods of their employees. As a result, the *status quo* is often denied. Several studies have shown that there is a negative relationship between passive leadership and the productivity and satisfaction of employees (Bass, Avolio, Jung, & Berson, 2003; Howell & Avolio, 1993). Our assumption was therefore that the dimensions of management control in a situation characterised by an active leadership style (transformational and transactional leadership) can lead to stronger correlations between these dimensions and the intended effects in terms of the four guiding concepts. This proposition resulted in the fourth and final hypothesis:

H₄: All three relationships addressed in the earlier hypotheses are strengthened by an active management style in terms of transformational as well as transactional leadership.

3 Methods

The database of this study was obtained by an extensive questionnaire which had to be filled out by the executive managers at 44 locations within the Correctional Services sector of the Dutch Correctional Institutions Agency (DJI). The researchers were

interested in the differences among the variables in a context of comparable management control procedures. Next to some general personal information on the respondents the questionnaire covered the styles of leadership, the dimensions of management control, and the four guiding concepts (Appendix 1).

3.1 *Sample selection*

The research setting of this study was the DJI, which consists of four sectors: Correctional Services, Forensic Care, Judicial Institutions for Young Offenders, and Special Facilities. The study was restricted to the 44 locations of the Correctional Services because of the comparability of the structures, procedures, contexts, and sizes of the locations. Ittner (2008) argues that a sample reduced to only one sector or industry branch has an important advantage, namely an implicit control over the complex of disrupting factors which influence the results of cross-sectional studies. In addition, a one-sector approach increases the study's internal validity. We chose this particular sector for two reasons. First, it is the largest sector within the DJI; in terms of size, the Correctional Services sector has the most locations (44), while its staff include executive as well as directing managers. Further, these locations have similar organisational structures, processes (e.g. planning and control), and functions. Our one-sector approach may, however, have compromised our study's external validity. When analysing the data, we observed relatively low standard deviations among the respondents at the locations. In studying the differences among the locations we observed relatively large outcome differences in terms of the management control dimensions, leadership styles, and the four guiding concepts used. This means that these locations indeed differed considerably. The validity of this finding was enhanced by a response rate of 83% of the managers working in this sector (Table 1).

The questionnaire was validated after it had been filled out by the managers of the first seven locations. It largely contained items from other validated questionnaires plus the four guiding concepts. Tables 2 and 3 show the results of the validation test and the factor analysis. The relatively low scores and sometimes large differences in scores between transactional and transformational leadership in the pilot gave rise to an additional investigation in which we looked for the possible influence of passive leadership. This is why the questions concerning passive leadership as based on Den Hartog et al. (1999) were added. In order to obtain a representative picture of each location, a response minimum of 70% of the managers was observed. At 43 of the 44 locations, this minimum was obtained. One location was about to be shut down and ultimately did not participate. The respondents' functions at the locations were mainly department manager, unit director, and location director.

Table 1 contains demographic information about the respondents; 83% of the managers filled out the questionnaire. To obtain a maximum response rate, all locations were visited multiple times. The distribution of the respondents among the various functions provided a representative picture. Of those who did not respond some were willing to explain why. Their most important reasons were: (a) their location had as yet not been approached to participate in the study, (b) the project had not been given priority by the location director, (c) their location was undergoing significant changes at the time, and (d) several other reasons, such as illness and holidays. The non-response was equally spread over the different functions. To evaluate if there was a possible order effect pointing to a non-response bias, the averages of the first 10 respondents were compared with those of the last 10 respondents at three locations. This comparison yielded no noticeable differences, which confirmed that there was no non-response bias.

Table 1. Demographic information respondents.

Characteristics	Category	Respondents
Age (years)	Minimum–maximum	20–64
	Average (s.d.)	46.6 (7.2)
	20–29 years	5
	30–39 years	100
	40–49 years	303
	50–59 years	199
	>59 years	4
Years of experience in organisation	<1 years	30
	1–4 years	66
	5–9 years	91
	>9 years	424
Years of experience in function	<1 years	81
	1–4 years	196
	5–9 years	201
	>9 years	133
Function (total of 754 functions)	Location director	34
	Unit director	85
	Department manager	328
	Staff member	20
	Other	144 ^a

^aThis group is relatively elaborate because it includes all managers of the staff and the supporting departments at a location.

3.2 *Measuring the dimensions, styles, and effects in terms of the four guiding concepts*

We defined the constructs in this research by using the guidelines of Bisbe, Batista-Foguet, and Chenhall (2007). The management control dimensions, leadership styles, guiding concepts, and constructs were measured by means of a questionnaire. We tested the hypotheses by comparing the organisations ($N = 43$). This approach was based on the assumption that leadership cultures are very much locally determined, which was confirmed by the differences in standard deviation in this respect (for the descriptive statistics, see Table 4).

The management control dimensions, leadership styles, and four guiding concepts for business excellence as proposed in this study were measured using multi-item manifest variables (as standards). The managers were asked about their general perception of the dimensions at their location on the basis of 91 items in total. All of the questions had to be answered according to a five-point Likert scale, some of which reverse-worded. Based on the conjunctive measurement theory, we assumed that the scores on the aggregate scales would have an interval measurement level. Next, we explain how we measured each dimension.

3.2.1 *Management control*

The management control as part of the TQM approach was measured on the basis of three dimensions: performance management, management communication, and management information. In designing the questions for these dimensions, we used a number of earlier studies. The first was that of Patterson et al. (2005) who developed a validated

Table 2. Results of the factor analysis.

	Dimensions, styles, and concepts (and subscales, if applicable) as formulated	Dimensions, styles, and concepts (and subscales) as actually experienced by the respondents (after factor analysis)
Management control	Performance management Clarity of organisational goals Policy deployment Management communication Management information Vertical attunement Usefulness of the information	Performance management Clarity of organisational goals Use of performance indicators Management communication Management information Assessment of the degree to which the management informaton is suitable for feedback Assessment of the degree to which the management information is suitable for adjustment (feedforward)
Leadership (on the basis of MLQ- 8Y)	Decision rationalisation Passive management by exception Transformational leadership Charisma Inspiration Intellectual stimulation Individual attention Transactional leadership Contingent reward Active management as an exception Passive management as an exception Passive or laissez faire leadership	Transformational leadership Charisma Individual attention Transactional leadership Appreciative leadership Corrective leadership Passive or laissez faire leadership
Effects	Direction Consistency Coherence Feedback	Direction Consistency Coherence Feedback

questionnaire to examine to what extent managers and employees are familiar with their organisation's goals and whether these goals are clear to them. The questionnaire, named the Organisational Climate Measure, consists of 17 items. A group of these items formed a subscale (clarity of organisational goals) relevant to our study. Moreover, we used the questions of Hertenstein and Platt (2000) to establish the link between organisational goals and concrete performance indicators.

We studied DJI's management information by measuring the evaluation of (1) the quality of the management information and the management information system and their contribution to the decision-making rationalisation process, and (2) the actual usefulness of the information. The first focal point was dealt with by using several parts of earlier validated questionnaires. Although the Communication Satisfaction Questionnaire of Downs and Hazen (1977) for measuring people's perceptions of the quality of the information in their organisation is almost 35 years old, it has remained a frequently used model. Some items in this questionnaire, taken from the Rational Goal Model (subscale Performance Feedback), concern the evaluation of the quality of feedback information. For the use of management information systems, we specifically referenced Torkzadeh and Doll (1999). The questions used in our research give an impression of the contribution

Table 3. Validation after 618 completed questionnaires.

	Dimensions, styles, and concepts (and subscales, if applicable) as experienced in this study	Cronbach's alpha in this study	Items	Mean inter-item correlation	Range of inter-item total correlation
Management control	Clarity of the goals (0.797)	0.799	18–22	0.510	0.341–0.635
	Use of performance indicators (0.685)		23–25		
	Management dialogue	0.889	36–39	0.612	0.392–0.697
	Management information suitable for feedback (0.896)	0.913	41–47	0.611	0.376–0.727
	Assessment of the degree to which management information is suitable for adjustment (feedforward) (0.816)		48–54		
Leadership (on the basis of MLQ)			55–62		
	Transformational leadership: charisma (0.927); individual attention (0.864)	0.942	63–71	0.699	0.544–0.789
	Transactional leadership: appreciative (0.703) and corrective (0.617)	0.669	72–77	0.382	0.164–0.488
	Passive or laissez faire leadership	0.860	78–80	0.632	0.551–0.727
Effects	Direction	0.910	81–84		
	Consistency	0.730	85–91	0.835	0.835–0.835
	Coherence	0.755	26–27	0.576	0.576–0.576
	Feedback	0.609	28–29	0.607	0.607–0.607
			30–33	0.386	0.312–0.432
			34–35, 40		

Table 4. Descriptive statistics ($N = 37$, passive leadership; $N = 43$, all other variables).

Code	Subject	Mean	Standard deviation	Actual range	Theoretical range
Leadership	Transformational	3.5	0.3	2.7–4.1	1–5
	Transactional	3.0	0.2	2.7–3.7	1–5
	Passive	2.3	0.3	1.8–3.0	1–5
Management control	Performance management	3.5	0.3	2.3–4.1	1–5
	Management dialogue	3.4	0.3	2.7–4.2	1–5
	Management information	3.2	0.3	2.5–3.9	1–5
Effect	Direction	3.1	0.5	2.3–4.1	1–5
	Consistency	3.0	0.5	2.3–4.2	1–5
	Coherence	3.0	0.4	2.3–4.1	1–5
	Feedback	3.1	0.3	2.5–3.9	1–5

of the information provided by the management information system to the rationalisation of the decision-making process. To address the second focal point, the usefulness of the management information, items were selected from a questionnaire composed and validated by Maish (1979).

3.2.2 Leadership

We investigated the degree of transformational, transactional, and passive leadership styles by using a selection of questions from the validated MLQ-8y of Den Hartog et al. (1999), which is a Dutch translation of a questionnaire designed by Bass and Avolio, the Multifactor Leadership Questionnaire, MLQ-8y (Bass & Avolio, 1989).

3.2.3 Effects

For measuring the intended effects in terms of the four guiding concepts of Ten Have et al. (2003), we developed 11 items (Appendix 1). These questions were validated on the basis of the studies conducted at the first seven organisations, which was followed by a factor analysis.

3.3 Statistic method and analysis

The first three hypotheses were tested by means of Pearson's r . Although from this test no cause–effect relations can be deduced, this was not considered problematic because the goal of our research was to measure the strength of relations. We were able to use Pearson's r because the variables could be considered as interval-level items since several indicators (items) and respondents were used per location as information sources.

Pearson's r can be interpreted as an effect size index (Cohen, 1992) which can have both a negative and a positive value. An absolute value of 0.3 or less shows a weak connection, one between 0.3 and 0.5, a moderately strong connection, and one higher than 0.5, a strong connection. Significance has been indicated as: $p < 0.10$: weakly significant (one-tailed); $p < 0.05$: significant (one-tailed); and $p < 0.01$: strongly significant (one-tailed).

To address the fourth hypothesis, a hierarchical regression approach was taken. In the first step, one of the management control dimensions (or the total construct) was entered together with active leadership (the construct of transformational and transactional leadership) or a specific leadership style. In the second step, the interaction between the two was integrated.

3.4 Discussion of the measurement model

We measured internal consistency by computing Cronbach's alpha. All constructs, except transactional leadership and feedback, had a Cronbach's alpha above 0.70. A principal component factor analysis of the data gathered via the questionnaire was performed to establish whether the intended dimensions and subdimensions could be found in our data set (Table 2). Thereafter, Cronbach's alpha and the inter-item correlations were calculated again (Table 3).

For testing the reliability and the internal consistency of the scales, different criteria were used. Items which did not meet these criteria were removed and thus not included in the analyses. This was done to increase the homogeneity of the scales. The criteria used in this study are quite common in the research and literature on this topic. The first criterion was the Cronbach's alpha of the scale which had to be >0.70 (Nunnally, 1967). The criterion for the mean inter-item-rest correlations was that they had to be >0.20 (Kline, 1986). The criteria for the factor loadings were that they had to be >0.30 and that the difference between the highest and next highest factor loading of an item on the factors had to be >0.20 . If the items on the scales formed by the factor analysis did not meet these criteria, they were removed. As a result, the scales found and included

in this study contained fewer items than those developed by, for example, Bass (1985) and Den Hartog et al. (1999). Based on these analyses, we proved the reliability and validity of the measurement model (Table 3).

4. Results

Figure 1 depicts the conceptual model as used for testing the relations between the theoretical management control dimensions, leadership styles, and the four guiding concepts (effects) as referred to in the hypotheses. Table 5 shows the correlations between the management control dimensions (including the construct) and the leadership styles (including the construct), on the one hand, and the guiding concepts (including the construct), on the other hand. In order to conduct the moderated regression, a second-order model was used. Table 6 contains the moderated regression results in the case of active leadership (transactional and transformational leadership) for the four guiding concepts.

Table 5 indicates that performance management and management communication are more intensively correlated with the four guiding concepts than management information. Moreover, Table 5 shows the important role of transformational leadership in influencing the guiding concepts direction, consistency, and feedback. The most important added value of transactional leadership is related to feedback. Passive leadership is negatively correlated with the five guiding concepts.

Hypothesis 1 proposed that performance management has positive correlations with both the separate concepts direction, consistency, coherence, and feedback, and the construct as a whole (as a measure of the total effect). The correlations between performance management in terms of the separate concepts and the total effect are high and statistically strongly significant (Table 5), which supports our hypothesis. So our study has confirmed

Table 5 Results of the dimensions, styles, concepts, and constructs ($N = 37$, passive leadership; $N = 43$, all other variables).

	Dimension/style/ concept or construct		Effects				Construct (R, Cs, Ch, F)
			Direction (D)	Consistency (Cs)	Coherence (Ch)	Feedback (F)	
Management control	Performance management (PM)	<i>r</i>	0.72*	0.82*	0.57*	0.74*	0.79*
	Management communication (MC)	<i>r</i>	0.67*	0.73*	0.63*	0.85*	0.80*
	Management information (MI)	<i>r</i>	0.41*	0.58*	0.49*	0.50*	0.53*
	Construct (PM, MC, MI)	<i>r</i>	0.71*	0.84*	0.66*	0.82*	0.84*
Leadership	Transformational leadership (Trf)	<i>r</i>	0.68*	0.69*	0.37*	0.75*	0.71*
	Transactional leadership (Tra)	<i>r</i>	0.27**	0.46*	0.56*	0.69*	0.55*
	Passive leadership	<i>r</i>	-0.50*	-0.59*	-0.50*	-0.57*	-0.68*
	Construct (Trf and Tra leadership)	<i>r</i>	0.59*	0.67*	0.48*	0.82*	0.73*

* $p < 0.01$, strongly significant (one-tailed).

** $p < 0.05$, significant (one-tailed).

Table 6. Moderated regression results in the case of active leadership for the four guiding concepts.^a

	Direction (D)		Consistency (C)		Coherence (C)		Feedback (F)		Construct effects (D,C,C,F)	
	β	p	β	p	β	p	β	p	β	p
Performance management (A)	0.54	0.00	0.68	0.00	0.35	0.02	0.33	0.00	0.59	0.00
Active leadership (B)	0.26	0.06	0.25	0.01	0.21	0.17	0.61	0.00	0.35	0.00
$A \times B$	0.10	0.35	0.22	0.01	0.42	0.00	0.10	0.24	0.24	0.00
Management communication (A)	0.48	0.03	0.49	0.01	0.58	0.01	0.52	0.00	0.60	0.00
Active leadership (B)	0.19	0.37	0.26	0.18	-0.06	0.77	0.38	0.01	0.21	0.19
$A \times B$	0.01	0.92	0.09	0.44	0.27	0.04	0.06	0.49	0.12	0.21
Management information (A)	0.26	0.05	0.39	0.00	0.31	0.02	0.25	0.01	0.36	0.00
Active leadership (B)	0.45	0.00	0.51	0.00	0.23	0.11	0.71	0.00	0.54	0.00
$A \times B$	0.15	0.28	0.12	0.30	0.38	0.01	0.08	0.36	0.21	0.04
Construct management control (PM, MC, MI) (A)	0.53	0.00	0.68	0.00	0.46	0.01	0.43	0.00	0.63	0.00
Active leadership (B)	0.22	0.15	0.19	0.09	0.07	0.66	0.51	0.00	0.26	0.01
$A \times B$	0.06	0.58	0.12	0.16	0.38	0.00	0.07	0.35	0.18	0.02

^aEach regression equation has the form: $Y = \beta_a \times A + \beta_b \times B + \beta_{ab} \times (A \times B)$.

Table 7. Moderated regression results with respect to transformational leadership for the four guiding concepts.^a

	Direction (D)		Consistency (C)		Coherence (C)		Feedback (F)		Construct effects (D,C,C,F)	
	β	p	β	p	β	p	β	p	β	p
Performance management (A)	0.50	0.00	0.68	0.00	0.39	0.01	0.34	0.00	0.58	0.00
Transformational leadership (B)	0.55	0.00	0.35	0.00	-0.14	0.39	0.30	0.01	0.33	0.00
A $\times$ B	0.25	0.06	0.29	0.00	0.16	0.31	-0.01	0.91	0.23	0.03
Management communication (A)	0.45	0.03	0.51	0.01	0.74	0.00	0.56	0.00	0.65	0.00
Transformational leadership (B)	0.61	0.00	0.44	0.02	0.18	0.05	0.12	0.36	0.28	0.08
A $\times$ B	0.40	0.05	0.34	0.08	-0.18	0.38	-0.00	0.98	0.31	0.07
Management information (A)	0.30	0.01	0.41	0.00	0.29	0.03	0.25	0.01	0.38	0.00
Transformational leadership (B)	0.67	0.00	0.53	0.00	-0.02	0.89	0.42	0.00	0.49	0.00
A $\times$ B	0.13	0.38	0.02	0.88	0.25	0.16	-0.04	0.73	0.12	0.38
Construct management control (PM, MC, MI) (A)	0.52	0.00	0.70	0.00	0.52	0.00	0.44	0.00	0.65	0.00
Transformational leadership (B)	0.59	0.00	0.38	0.00	-0.17	0.30	0.25	0.03	0.34	0.00
A $\times$ B	0.34	0.03	0.32	0.01	0.26	0.15	-0.02	0.88	0.30	0.01

^aEach regression equation has the form: $Y = \beta_a \times A + \beta_b \times B + \beta_{ab} \times (A \times B)$.

that performance management is strongly related to direction, consistency, and feedback. In fact, it appeared to be most strongly associated with consistency. Hypothesis 2 proposed that management communication is positively correlated with both the separate concepts direction, consistency, coherence, and feedback, and with the total construct. Our findings confirm this hypothesis: again, each relation appeared to be statistically significant (Table 5). Further, it can be concluded that the dimension management communication has the highest correlation with feedback. This finding empirically supports Brown and Benson's (2005) argumentation that an increased focus on vertical management communication enables managers to take more initiatives and to achieve more. Next, management information was hypothesised (hypothesis 3) as having a positive correlation with both the separate concepts direction, consistency, coherence, and feedback, and with their total effect. This hypothesis was also fully supported by the results of our study (Table 5). These relationships were, however, less strong than those of performance management and management communication. Finally, in hypothesis 4, we predicted that the correlations investigated on the basis of the first three hypotheses would be strengthened by the active leadership form as a construct of transformational and transactional leadership. This hypothesis was partly confirmed. Tables 6 and 7 present the results of the interaction analysis in more detail.

Table 6 shows that active leadership has a significant moderating effect on the relationship between the dimensions of management control (and their constructs) and coherence. In addition, we observe a significant moderating effect on the relationship between two dimensions of management control, namely performance management and management information, and the effects construct. Finally, active leadership strengthens the relationship between management control and the total effects. Further, we analysed the moderating effect of the separate styles of leadership (transformational, transactional, and passive leadership). Table 7 presents the results for transformational leadership. From the analysis, it could be concluded that the strengthening effect of active leadership is primarily due to transformational leadership. Figures 2 and 3 give a graphical representation of this effect. No significant moderating effects of transactional leadership were found. Passive leadership only appeared to have some small significant moderating effects on

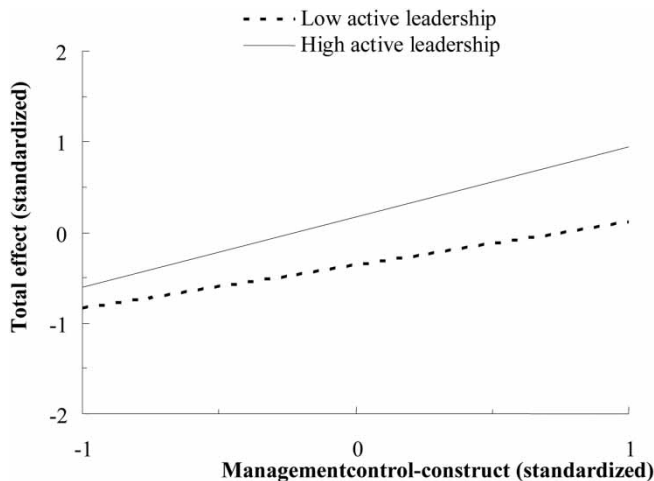


Figure 2. Graphical representation of the moderating effect of active leadership on the relationship between the management control construct and the effects construct.

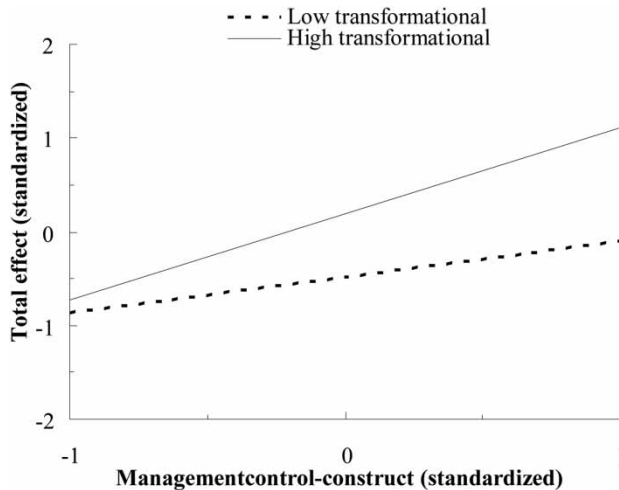


Figure 3. Graphical representation of the moderating effect of transformational leadership on the relationship between the planning and control construct and the effects construct.

the relationships between management control (including its dimensions) and the effects in terms of the four guiding concepts (and the construct as a whole).

The above results and conclusions are in line with the theory of Bass (1985), which claims that active leadership (transformational and transactional) is crucial to achieve business excellence. This study has, however, only confirmed the positive influence of transformational leadership on the relationship between the management control construct and the construct of the four guiding concepts (as a measure of the total effect). Further, we found some significant moderating effects of several dimensions and management concepts (Table 7). Earlier research (Bass et al., 2003; Bommer, Rich, & Rubin, 2005; Nemanich & Keller, 2007) shows that organisations with a higher degree of transformational leadership are more effective in reaching their goals. This study has confirmed this finding.

5. Conclusion

The empirical goal of this study was to investigate the moderating effect of leadership styles in the relationship between management control and the four guiding concepts for business excellence. Based on the existing literature, we designed and tested a conceptual model which depicts the relations between the theoretical constructs. The current studies on these relationships have mainly focussed on the specific relations between one of the two approaches to control, namely management control in terms of performance management (Hall, 2008; O'Sullivan & Abela, 2007) or leadership (Bommer et al., 2005; Nemanich & Keller, 2007) and business excellence. None of these studies, however, have considered the two as being interconnected. Our research has therefore made a concrete contribution to increasing the understanding of the correlations between the two approaches to control in organisations and business excellence in terms of the four guiding concepts (Ten Have et al., 2003).

This study has contributed to the literature in the following ways. First, it has increased our understanding of the factors which make management control as part of a TQM approach such a widely discussed topic. Second, it has yielded the following results: (a) performance management and management communication as dimensions of

management control have a strong relationship with the effects construct, (b) transformational leadership has the most positive influence on the correlation between management control and the effects construct, (c) active leadership (the construct of transactional and transformational leadership) has a strong correlation with the effects construct, and (d) active leadership and particularly transformational leadership play a moderating and strengthening role in the relationship between management control and the effects construct. In addition, our study has provided a validated questionnaire for testing the four guiding concepts for business excellence (direction, consistency, coherence, and feedback).

This research is also relevant to practitioners who are seeking to improve their approaches to management control as part of a TQM approach. In this respect, we would like to add that although managers find management communication important, in practice, they may not always be sufficiently aware of the primarily facilitating role of discussing annual plans and sharing management information. The need for an intensive and ongoing dialogue on issues such as vision, strategy, and objectives based on appropriate feedback information have appeared to be of paramount importance.

Overall, the findings of this study have provided several important insights into and stimuli for future research. For example, a strong correlation was found between management communication and its effects in terms of the four guiding concepts. This finding relates to the question: what are effective ways of management communication?

Another interesting outcome in the context of follow-up research concerns the relations between the dimensions of management control, the leadership styles, and business excellence, both in the field of finance and in other areas. The strong correlations between management control and the guiding concepts for business excellence may form the basis for research into interventions aimed at improving the effectiveness of management control systems. In this respect, Rusjan (2005) argues that the EFQM Excellence Model is appropriately structured to play a significant role in the analysis of organisational improvement.

However, this study also has its limitations. In particular, the context of 43 highly comparable organisations within one specific sector, the Dutch Correctional Services, has restricted the generalisation of the results beyond this context (external validity). Therefore, the study has to be replicated in other settings. Furthermore, we did not take account of the different objective financial and operational performance measures used by the organisations within the Correctional Services. This issue concerns the internal validity of the research, which may have been improved by also investigating the correlations between the dimensions of management control, the styles of leadership, and these performance measures. This was not done because there was no uniform performance measurement system available. The high response rate (83%), however, again improved the internal validity of the conclusions of this study. Another restriction was the relatively low Cronbach's alpha of the three feedback items (0.609). This low convergent validity may very well be explained by the relatively low quantity of items.

In addition, although the theories of transformational and transactional leadership used in this study have provided important insights into the nature of effective leadership, most of them have conceptual weaknesses that undermine their suitability for properly explaining this concept (Yukl, 1999). Yukl, for example, argues that these theories do not clearly describe the underlying influence processes, and neither do they specify how the leader's behaviour is related to these processes. Although transformational and charismatic leadership are often treated as equivalents, there are plausible differences between them which should not be ignored or discounted. Both types of leadership are associated with similar

types of behaviour, but in some respects they are basically different. A transformational leader seems more likely to be focussed on empowering the followers and making them partners in the quest to achieve important objectives. A charismatic leader, on the other hand, is more inclined to emphasise the need for radical change, which can only be accomplished if the followers have trust in his/her unique expertise. In this respect, Yukl proposes a focus on dyadical concepts or adding other concepts, such as, for example, the leader–member exchange theory (Deluga, 1998) or the servant leadership theory (Smith, Montagno, & Kuzmenko, 2004).

Summarising, our results gathered from a database of 618 managers at 43 locations of the Correctional Services in the Netherlands indicate that an active leadership style (in particular, transformational leadership) together with a sufficient degree of management communication are significant predictors of the effectiveness of management control systems as part of a TQM approach in organisations striving for business excellence.

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Appendix 1

We only added the questionnaire developed in this research. For the items of the management control dimensions and leadership styles, we used items of studies conducted earlier (see Section 3.2). The detailed questionnaire can be obtained from the first author.

Items measuring the effects in terms of direction:

- The management has formulated a management philosophy.

- The management philosophy is communicated by the management.

Items measuring the effects in terms of consistency:

- The strategy and organisational goals are communicated on a regular basis.
- The strategy and organisational goals are translated into objectives on all management levels and communicated accordingly.

Items measuring the effects in terms of coherence:

- The work processes of others within the organisation are regularly discussed.
- The coherence in work processes is regularly discussed within the organisation.
- Performance is measured and rewarded when it contributes to the goals realised.
- When improvements are realised they are implemented step by step.

Items measuring the effects in terms of feedback:

- In the management dialogue, I am not told whether I do my work well.
- In the management dialogue, it is difficult for my manager to assess the quality of my performance objectively.
- In the management dialogue, I am informed about how my work is related to that of other staff members.

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