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The PSM-Leadership Fit: A Model of Performance Information Use

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Abstract

This article examines the use of performance information by public managers. It conceptualizes purposeful data use as a type of extra-role behaviour which requires additional effort on the part of the managers and which is not extrinsically rewarded. The article sheds light on one potential antecedent of performance information use – the motivation of the users. It argues that we can observe high levels of data use if managers driven by public service motivation (PSM) work under transformational leaders. Using a needs-supply perspective on supervisors and followers we suggest that there is a PSM-leadership fit which fosters the performance of this extra-role behaviour. The article is based on data from German local government and its findings contribute to the literatures on PSM as well as on performance management.

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1 Introduction

Performance measurement has affected the management of public organizations worldwide. Data on the efficiency, quality, and effectiveness of public services must be systematically collected and reported by public administrations (Pollitt and Bouckaert 2004; Bouckaert and Halligan 2008). The final stage of the performance management cycle is using performance data to make better informed decisions. This, however, has been the “Achilles heel” of public management. Some studies have reported that decision-makers show little interest in performance data (Pollitt 2006); others observed dysfunctional uses (Bevan and Hood 2006), the politicization of the data (Moynihan 2008) or just passive compliance (Radin 2006). These findings illustrate that performance information use is complex and might work differently from what textbooks have suggested. This gap in knowledge is the reason why scholars regard a better understanding of the use (and non-use) of the collected data by public managers as the “big question for performance management” (Moynihan and Pandey 2010, see also Van Dooren and Van de Walle 2008).

Research on performance information use is on the rise. There are about two dozens of articles which have studied variations of purposeful performance information use (Kroll 2012). These articles mainly used linear, additive models to uncover and compare the direct effects of different variables on the managers’ use of performance data. This approach has been useful for structuring the research field and for distinguishing between crucial variables and unimportant factors. However, in order to improve our understanding of real life public management decision-making, we might need to further specify our models by using moderators (“interactions”) and mediators (“indirect effects”). As Frazier *et al.* (2004, p. 116) concluded, “the identification of important moderators [and mediators] of relations between predictors and outcomes indicates the maturity and sophistication of a field of inquiry.”

This article focuses on one antecedent of performance information use that has not received much attention – a manager’s motivation and values. We base our argument on the premise that the use of performance data creates extra effort on the part of the managers and is a cognitive process which is not extrinsically rewarded (Moynihan *et al.* 2012a). Therefore, this behaviour is more likely to be performed by managers with a high motivation to go the extra mile in order to serve the public (a so-called public service motivation, PSM). This article will show that the managers’ PSM effect is moderated by the transformational leadership skills of their supervisors. In other words, leaders who are able to communicate that public service work is meaningful can stimulate managers’ PSM orientation and hence intensify their use of performance data. We argue that transformational leaders and PSM-driven followers are a good fit because these leaders supply what their followers need and therefore tap their full motivational potential.

There have been a few pioneering studies on the motivational aspects of performance data use (Moynihan and Pandey 2010; Moynihan *et al.* 2012a). These studies have argued that managers with a distinct public service motivation and who are able to perceive the prosocial impact of their work are more likely to show the extra effort that performance data use requires. A different stream of literature which has examined the effect of civil servants’ motivation on various beneficial behaviours found that this effect is often contingent on further interacting variables

(e.g. Steijn 2008; Christensen and Wright 2011). Our article contributes to bridging both literatures. We argue that a prosocial motivation is an important trigger of performance information use but make the case that this effect can be considerably increased by the leadership behaviour of supervisors. Unlike other studies that identified important moderators of PSM, this article focuses on transformational leadership instead of organizational or job-related factors (Bright 2007, 2008; Steijn 2008; Wright and Pandey 2008; Christensen and Wright 2011).

The article proceeds by defining performance data use and reviewing the literature on its antecedents. We then develop our argument based on literature on motivation, leadership, and the PSM-environment fit. The subsequent section will introduce our data, measures, and statistical limitations. This will be followed by the presentation and discussion of our results and our major conclusions.

2 Performance Information Use and its Antecedents

There are many different uses of performance information, some of which are quite surprising (Moynihan 2008). To cope with this conceptual complexity, the article focuses only on the “purposeful use” of the data which refers to the original, normative idea behind performance measurement, which is to improve services through better informed decisions, goal-based learning, or sanctioning and rewarding (Van Dooren *et al.* 2010; Moynihan *et al.* 2012a). Understanding the purposeful use of performance information is important because this will help to identify factors which foster or constrain this desirable management behaviour.

A systematic review of potential impact factors of data use by Kroll (2012) categorized them into environmental, organizational, and individual variables. This review showed that most studies tested the influence of organizational factors. With regard to the factors from the individual level, mainly socio-demographic variables have been examined thus far. The following paragraphs will review the findings for the organizational and individual variables which will be included in our model.

We begin with the organizational level. A factor that has been tested many times and has shown a significant effect of high magnitude is the measurement system’s maturity (Berman and Wang 2000; de Lancer Julnes and Holzer 2001; Melkers and Willoughby 2005; Yang and Hsieh 2007; Moynihan and Landuyt 2009; Moynihan *et al.* 2012b). The explanation of this effect is that the mere collection and reporting of performance data does not automatically lead to their utilization. Instead, reporting needs to be aligned to the demands of the addressees, target evaluations need to be provided for various relevant performance dimensions, and disaggregated data need to be linked to specific goals and strategic plans. Another organizational factor that has been found to foster the use of performance information is a distinct innovative culture (Moynihan 2008; Johansson and Siverbo 2009; Moynihan *et al.* 2012b). Such a culture is characterized by a strong focus on improvements as well as learning from mistakes and therefore seems to naturally embrace the use of performance information. The findings for factors like an organization’s size and financial situation are less clear-cut. Though larger organizations are usually associated with more capacity to analyse and prepare performance data (Dull 2009), there is a good deal of evidence that its effect gets marginalised when alternative variables have been controlled for (Melkers and Willoughby 2005; Taylor 2011; Moynihan *et*

al. 2012b). The findings for the impact of financial distress are even more ambiguous. Some studies have shown that budget cuts do not require using performance information (Berman and Wang 2000; Johansson and Siverbo 2009), whereas Moynihan and Landuyt (2009) reported even a negative impact of financial distress on the use of performance data.

With regard to the individual level of explanations, there is scattered evidence that managers who perform internally oriented tasks show lower levels of performance information use (Moynihan *et al.* 2012b). Managers with external clients, however, seem to feel greater pressure from stakeholders to consider performance data in order to justify their decisions. The managers' work experience has mainly yield inconclusive results (Melkers and Willoughby 2005; Dull 2009; Moynihan and Pandey 2010), though there are studies which found that more experienced managers are rather reluctant towards using performance data (Moynihan and Landuyt 2009). We know still very little about the impact of managers' educational background. Though the level of educational attainment has mostly shown an insignificant effect on how managers use performance information (Moynihan and Ingraham 2004; Moynihan *et al.* 2012a), one could speculate that the managers' field of study might make a difference.

This brief review has shown that there are a growing number of studies which have examined variables influencing the use of performance data but most of them focused on organizational and socio-demographic individual factors. Drawing on the work by Moynihan *et al.* (2012a) and Wright *et al.* (2012), this article will argue that we can expect a high level of data use if intrinsically driven managers experience leadership which addresses this type of motivation. We will show that motivation and leadership are critical factors even if we control for the organizational and individual influences that were discussed in this section.

3 PSM, Transformational Leadership, and Performance Information Use

Before we turn to the potential effects of motivation on performance information use, we need to clarify the nature of this management behaviour. We broadly defined purposeful information use as making better-informed management decisions based on performance data. In order to use performance information for this purpose, managers need to engage in measurement practices, read and analyse reports and eventually challenge the status quo if performance data indicates that there is a problem (Van Dooren *et al.* 2010). This creates extra effort on the part of the managers, conflicts in organizations and inconveniently "disrupts incrementalism and existing patterns of decision making" (Moynihan *et al.* 2012a, p. 469). A second characteristic of performance data use is that it is a cognitive process. Though we could observe how managers read performance reports as well as the consequences of their decisions; incorporating performance information into decisions is a mental activity. This is why data use in contrast with the collection or reporting of information cannot be rewarded or sanctioned and must occur voluntarily (Moynihan 2008; Moynihan *et al.* 2012a).

Creating extra work and conflict as well as not being rewarded makes performance information use an extra-role behaviour. Such behaviour "is (1) not specified in

advance by role prescriptions, (2) not recognized by formal reward systems, and (3) not a source of punitive consequences when not performed by job incumbents” (van Dyne and LePine 1998, p. 108). Research has shown that intrinsic motivation is an important driving force behind the performance of extra-role behaviour (Schaubroeck and Ganster 1991; Williams and Anderson 1991). With regard to our public administration setting, we therefore assume that it is mainly managers with a distinct public service motivation who will engage in the extra-role behaviour of performance data use. The following section elaborates on the effect of PSM on performance data use.

3.1 The PSM Effect

The concept of public service motivation has gained attention since its introduction by Perry and Wise (1990). Following Paarlberg and Lavigna (2010, p. 710) we understand PSM as “the beliefs, values, and attributes that go beyond self-interest and organizational interest to energize employees to do good for others and contribute to the well-being of [...] society”. PSM is usually conceptualized as a multidimensional construct consisting of four dimensions: attraction to policy-making, commitment to public interest, compassion, and self-sacrifice (Perry 1996).

There are a number of studies which reported a positive relationship between PSM and extra-role behaviour, job motivation, and the individual performance of civil servants. All findings provide support for the basic mechanism that was already suggested by Perry and Wise (1990). PSM-oriented administrators experience task identity and perceived task significance in their work which leads to a higher job motivation. This motivation, in turn, is the foundation for the extra effort they put in their daily work.

There is empirical evidence that PSM-driven employees are more likely to engage in organizational citizenship behaviour, such as helping co-workers or being on time (Kim 2006; Pandey *et al.* 2008). Other studies found that PSM-oriented employees report higher levels of individual performance (Vandenabeele 2009) and do also better in formalized performance appraisals (Naff and Crum 1999). Leisink and Steijn (2009) reported that a civil servant’s commitment to public interest leads to an increase in their willingness to exert effort at their workplace and in their affective organizational commitment. Another study showed that public employees who are highly driven by the mission of the organization they work for show high job motivation and extra-effort at the workplace (Wright 2007). Altogether, we can summarize that there is firm empirical evidence for a general positive effect of a PSM-orientation on the performance of extra-role behaviour in public sector organizations. We will now look into two studies which examined this effect on the more specific extra-role behaviour of performance data use.

Based on a large-N survey of U.S. local government managers Moynihan and Pandey (2010) reported that public managers’ PSM has a significant effect on the purposeful use of performance information. This effect remained relevant even after job attributes, organizational as well as external factors, and census measures were controlled for. This study also tested the effect of managers’ reward expectations which turned out to be insignificant. Based on these findings Moynihan and Pandey concluded that performance data use is fostered by altruism rather than self-interest. A similar article based on data from eight public and non-profit organizations

confirmed these results (Moynihan *et al.* 2012a). This study found that managers make frequent use of performance data if they perceive the social impact of their work to be high. In contrast to the logic of self-interest proposed by agency theory, this observation highlights the importance of prosocial values in explaining the extra-role behaviour that managers showed in order to engage in data use. Using performance information might help managers to make a difference at their job and to improve the outcomes of their work. Hence, this behaviour seems to appeal to managers who are highly PSM-driven.

H₁: Public managers' public service motivation has a positive effect on their performance information use.

3.2 The PSM-Leadership Fit

There is an increasing amount of literature arguing that PSM effects can be contingent on contextual settings – the so-called PSM-fit. The idea behind such a fit is that the impact of PSM could be strengthened or curbed by the opportunities a civil servant has to realize this motivation. Impact factors on the PSM effect could be the characteristics of a job or an organization which promote or contradict PSM-related values. The fit between a person and their environment can be defined “[...] as the compatibility between an individual and a work environment that occurs when their characteristics are well matched” (Kristof-Brown *et al.* 2005, p. 281). This concept has been used to specify the relationship between PSM and outcomes, such as work effort (Bright 2007; Leisink and Steijn 2009), job satisfaction (Bright 2008; Steijn 2008; Wright and Pandey 2008), organizational commitment (Leisink and Steijn 2009), turnover intention (Bright 2008; Moynihan and Pandey 2008; Steijn 2008), and job choice (Christensen and Wright 2011). These studies showed that the predictability of the effect of PSM on desirable outcomes improves if we account for an environmental fit.

Surprisingly, research on public service motivation focused only on two types of the person-environment fit: person-organization fit (Bright 2007, 2008; Moynihan 2008; Wright and Pandey 2008; Christensen and Wright 2011) and person-job fit (Steijn 2008; Leisink and Steijn 2009; Christensen and Wright 2011). Beyond the field of PSM, studies have shown that there is another important congruence relationship that might determine the behaviour of employees – the person-supervisor fit (see a meta-analysis by Kristof-Brown *et al.* 2005). We believe that an employees' motivation combined with their supervisor's leadership style can impact the use of performance information in the workplace.

3.2.1 PSM and Transformational Leadership

This section puts forward the idea of a person-supervisor fit for civil servants who are highly PSM-driven. Applying this approach, we argue that there are leadership styles that better match the needs of the PSM-oriented civil servants than others. We assume that a good match is when the PSM-effect on the performance of extra-role behaviour will increase.

We believe that PSM-focused civil servants need supervisors who are able to show transformational leadership. Transformational leaders “raise followers' goals to higher planes, to a focus on transcendental goals akin to the self-actualization needs defined by Maslow” (Rainey 2009, p. 327, see also Shamir *et al.* 1993, p. 579).

What makes this leadership style unique is its combined use of charismatic influence, inspirational motivation, intellectual stimulation, and individualized consideration to convince followers of their work's added value and motivate them (Burns 1978; Bass 1985).

In contrast to previous research, we do not argue that supervisors and followers have to be alike in their personality or generally share the same values in order to achieve a better performance (Witt 1998; Krishnan 2002). Instead, they have to complement each other and one has to "supply" what the other "needs" (Kristof 1996). We can think of the supervisor-follower relationship as a puzzle which can only be solved if the jigsaw pieces are correctly joined. In other words, it is not sufficient if leaders and followers are both generally altruistically motivated. Leaders are needed who are able to actively align the followers' prosocial values with the mission and ideology of their particular organization. Transformational leaders are known to be good at this: They communicate in an inspirational way, set clear and meaningful goals, and create organization-specific value congruence through onboarding (Paarlberg and Lavigna 2010). Therefore, transformational leaders might be able to stimulate the needs of the PSM-oriented managers and tap their full motivational potential. We assume that the transformational leaders' emphasis on collective interests and the organization's mission will have its biggest impact when followers are generally open to these ideas and embrace PSM-related values.

The general idea of a fit between followers and leaders is not new. One example of early contingency approaches in leadership research is the situational leadership theory by Hersey and Blanchard (1969). They argued that leaders have to choose their leadership style (directing, coaching, supporting, or delegating) depending on the level of motivation and the competences of their followers. The person-supervisor fit is also of major concern in the growing literature on followership. This research stream emphasizes that leaders are highly dependent on their followers and can hence only be as good as their followers (Riggio *et al.* 2008). In our case this means that transformational leaders, in order to be successful, need followers who are open to be led in a transformational way and who embrace higher goals and values.

H₂: The effect of managers' public service motivation on the use of performance information is contingent on the transformational leadership the managers have experienced.

3.2.2 Transformational Leadership and Performance Data Use

We argued that transformational leadership might moderate the effect of PSM on performance data use. A supervisor's leadership style could, however, also directly influence a managers' use of performance data independently from their PSM. This section reviews the literature on such a direct effect.

Most research on the relationship between a leader and their follower's performance information use did not focus on the transformational aspect of this relationship (for a review see Moynihan *et al.* 2012b). Instead, leaders' support for a performance-based steering philosophy was reported to be an important antecedent of data use (Moynihan and Ingraham 2004; Yang and Hsieh 2007). Dull (2009) argued that the credible commitment of agency leaders to performance measurement

is critical in order to motivate the followers to devote their scarce resources to these practices.

The concept of transformational leadership is based on several features that fit with an orientation towards performance and an interest in performance data. Though the focus of this leadership style is on influencing the work climate instead of directly controlling followers, transformational leadership is not at odds with performance-based managing. Transformational leaders do not neglect using transactional instruments but they are able to show leadership beyond incentives and rewards (Bass 1985). Another argument for why transformational leadership could foster the followers' focus on performance data is that this leadership style has a strong orientation towards improvement, innovation, and organizational change (Yukl 2008). In order to pursue these goals, leaders need to keep track of achievements and might therefore support the use of performance information. However, following the logic of transformational leadership, supervisors would not encourage using this data as a mere monitoring device but for motivational and learning purposes. Moynihan *et al.* (2012b) found that transformational leadership and the followers' performance information use are positively correlated but this effect disappeared once they accounted for mediators. More evidence for an indirect effect of this leadership style on several types of extra-role behaviour comes from studies by Park and Rainey (2008) and Wright *et al.* (2012).

Altogether, we assume a positive relationship between transformational leadership and performance data use. Since there is a lack of empirical research providing support for a significant direct effect, we formulate the following hypothesis with caution.

H₃: Transformational Leadership behaviour on the part of the supervisor has a positive effect on the managers' performance information use.

4 Data and Methods

This article's empirical analysis is based on data that was collected from local government in Germany in 2011. The survey focused on all cities with county status and the districts of the city states Berlin, Bremen, and Hamburg because their administrations fulfil comparable functions but still offer enough variation in terms of explanation factors. The survey was sent to the managers that are responsible for eight selected divisions in every city (N=954). The response rate was 29.8 %. A non-response analysis (n=164) indicated, however, that about 36.6 % of the non-respondents did not participate in the survey because they have not systematically collected performance data. As we can only study the use and non-use of performance information if this data is existent, we could theoretically exclude the 36.6 % (extrapolated to all non-respondents) from the population of interest, and the adjusted response rate could be considered as 39.8 %. As the sample still consists of less than 50 % of the population, we conducted further analyses which showed that the sample represents the overall population of interest quite well. We tested whether larger cities and all surveyed divisions are adequately represented in the sample and did not find indicators of a critical over- or underrepresentation.

All our measures can be found in the appendix. We operationalized purposeful performance data use based on the conceptualization by Van Dooren *et al.* (2010) which includes three purposes: steering and controlling (items 1, 2), learning (items 3, 4), and giving account (items 5, 6). Following previous studies, we modelled different performance data uses as a one variable (constructed as an additive index, Cronbach's alpha = 0.91) assuming that managers who utilize this data for one purposeful function are also likely to use it for another (de Lancer Julnes and Holzer 2001; Dull 2009).

The measures for PSM are taken from Perry's 1996 study. Each of the three chosen items represents a different sub-dimension of PSM. In line with previous studies which used PSM short scales, we did not consider the dimension "attraction to policy making". Our items for public interest and self-sacrifice have also been used by other studies (see Alonso and Lewis 2001; Coursey *et al.* 2008). The compassion measure has been chosen because its German translation takes into account specifics of the "Germanic" public administration and therefore might pick up on Germany-specific PSM variation. As the term "patriotism" could have a negative connotation due to German history, Hammerschmid *et al.* (2009) suggest using a different translation of this item for surveys in German-speaking countries. They have furthermore shown that their translation is highly correlated with Perry's conventional compassion measures. The PSM sub-dimensions share only a moderate portion of variance as their Cronbach's alpha of 0.56 indicates. This could be explained by the argument put forward by Kim (2011) that the different PSM dimensions do not measure the exact same underlying latent concept reflectively but instead could be modelled as an additive aggregate, where public managers can score high on one sub-dimension and low on another. Such a formative conceptualization also seems to work for our data because all items are only moderately correlated (the coefficients range between 0.27 and 0.42) and their VIF values turn out to be relatively low (1.12 - 1.26).

The empirical indicators for transformational leadership have been adapted from House's (1998) research. We asked the division managers to evaluate the transformational leadership skills of their supervisors who are the politically appointed department heads and vice mayors. Our measures for developmental culture are adapted from the widely cited study by Zammuto and Krakower (1991). These operationalizations of transformational leadership and developmental culture turned out to be quite reliable (their Cronbach's alphas are 0.87 and 0.90) and have been validated in the context of public administration in studies by Moynihan and Pandey (2010); Moynihan *et al.* (2012b) and Wright *et al.* (2012).

To account for differences between the various tasks managers perform, we divided them into two groups: internally (1) and externally (0) oriented managers. The managers' experience was measured on a metric scale whereas their educational background in public administration was coded as a dummy. Measurement system maturity was operationalized applying a synoptic planning approach where the maturity increases as a city moves from the mere production of performance measures to their integration in hierarchically structured strategic plans. Distinctions between larger (1) and smaller (0) as well as financially stressed (1) and financially strong (0) cities were made using two more dummies.

Unlike previous research, we did not use direct measures of the PSM-fit. Asking the respondents to assess whether they think that their supervisor's leadership style stimulates their motivation might create perceptual distortions. Instead, we generated a moderation term "PSM X Transformational Leadership". This term is the product of the multiplied scores of PSM and transformational leadership. In order to avoid high correlations with the individual variables and to make the main effects interpretable (Hartmann and Moers 1999), each variable was centred before the multiplication. Following Osthoff (2007), we created an indirect "fit measure" without using additional items of a perceived fit. This procedure is regarded to be quite reliable because indirect fit measures are usually less prone to a common-source bias than direct evaluations (Kristof 1996, p. 11). There is a good deal of research that has utilized this approach (Pritchard and Karasick 1973; Steijn 2008; Christensen and Wright 2011).

With regard to the hypothesized moderation we are not interested in its strength but in its form (Arnold 1982; Hartmann and Moers 1999). That is, we do not expect that PSM will explain much more variance in the variable performance data use if managers are led transformationally compared to situations where supervisors do not show this leadership style. Instead, we are interested in the differences of slopes. We assume that the slope of the relationship between PSM and data use is much steeper in cases where managers have experienced transformational leadership compared to cases where they have not. We furthermore assume that the moderation is monotonic and thus the slopes of all interaction effects will be positive. This is in line with hypothesis 1. Since we expect the main effect of PSM to positively influence data use, we propose that this effect's slope will still be positive even if there is no or only little transformational leadership.

	Range	Mean	SD	1	2	3	4	5	6	7	8	9
(1) Performance information	6-42	25.61	8.84	1								
(2) Transformational leadership	5-35	21.60	7.12	.14*	1							
(3) Public service motivation	3-21	13.54	3.32	.13*	.07	1						
(4) Internally oriented task	0-1	.38	.49	-.14*	.09	-.18*	1					
(5) Managers' experience	1-45	23.56	11.16	-.11	.00	.01	-.09	1				
(6) Public Admin. background	0-1	.50	.50	-.07	.05	-.11	.09	.56*	1			
(7) Measurement system maturity	0-13	3.55	3.72	.44*	.22*	-.01	.01	-.01	-.13	1		
(8) Developmental culture	3-21	11.81	3.81	.14*	.40*	.14*	.07	.03	-.03	.19*	1	
(9) Large cities	0-1	.17	.38	.09	.03	-.10	.03	.04	.02	.06	.02	1
(10) Financially stressed cities	0-1	.28	.45	.03	-.03	.03	.06	-.02	-.05	.29*	-.06	-.28*

* $p < 0.05$

TABLE 1: Correlation matrix

All our variables of main interest could be considered desirable for public administration. Public managers are supposed to use performance data, be PSM-driven, be led in a transformational way, and work in an innovative environment. Hence, there might be a social-desirability bias at play causing high ratings and correlations of all these variables. To test for such a common-source bias and related problems of discriminant validity, we ran a factor analysis of all items that were used to model our variables of main interest (Podsakoff *et al.* 2003). An unrotated factor solution revealed that one general factor accounts for only 29 % of the variance in all perceptive measures and that it needs four factors (all have Eigenvalues above one) to explain 68 % of the variation of these items. A rotated solution even shows that all items highly load on the factors they have been theoretically associated with and that there are no cross-loadings higher than 0.08. This implies the following: First, a general factor that could be caused by social-desirability and would account for most of the variance in our perceptive items does not seem to exist. Second, all variables of main interest have a great deal of discriminant validity. These findings are supported by the fact that all variables are only moderately correlated (see table 1).

5 Results

Table 2 shows the results of the OLS regression model of performance information use. Data use has been modelled as a function of the three hypothesized predictors as well as the factors discussed in the literature review. A two-stage approach was chosen in order to sort out whether the moderation effect we are interested in makes a difference. Model 1 includes all independent variables, and model 2 additionally takes the interaction term for public service motivation and transformational leadership into account.

Model 1 shows a significant positive direct effect of public service motivation on performance information use. This main effect remains significant in model 2, though the level drops down to 6 %. This indicates that the PSM effect by itself is of reasonable significance even if supervisors only show an average level of transformational leadership. Model 2 reveals further that the relationship between PSM and performance information use is significantly moderated by a supervisor's transformational leadership skills. This interaction term explains an additional portion of variance in data use even if the main effects of the individual variables PSM and transformational leadership have been "partialled out" and held constant. This moderation effect is crucial because it improves the predictability of our model by 1.6 % which is a significant R^2 increase ($P > F = 0.03$). These findings confirm hypotheses 1 and 2. However, both models also reveal that, in contrast with what was hypothesized, transformational leadership does not have a significant main effect on the use of performance information.

	Model 1	Model 2
Transformational Leadership	0.051 (0.486)	0.059 (0.412)
Public Service Motivation	0.136* (0.042)	0.127 (0.057)
Internally oriented task	-0.140* (0.040)	-0.140* (0.039)
Managers' experience	-0.155 (0.056)	-0.131 (0.107)
Public administration background	0.066 (0.417)	0.053 (0.511)
Measurement system maturity	0.376** (0.000)	0.366** (0.000)
Developmental culture	0.040 (0.582)	0.043 (0.551)
Large cities	0.063 (0.354)	0.063 (0.350)
Financially stressed cities	0.047 (0.490)	0.053 (0.429)
PSM x Transf. Leadership		0.139* (0.033)
Observations	200	200
<i>Prob > F</i>	0.000	0.000
<i>R</i> ²	0.216	0.234
Adjusted <i>R</i> ²	0.178	0.194

Standardized beta coefficients; *p*-values in parentheses
* *p* < 0.05, ** *p* < 0.01

TABLE 2: *Regression analysis of the effects on performance information use*

To be better able to interpret the moderation effect, we produced graphs where performance information use is regressed on PSM at a low and a high level of transformational leadership while holding the control variables at their means (see figure 1). The two different levels have been determined by setting two values (mean \pm 1 standard deviation) in the regression equation. We can see in the figure that the effect of PSM on performance data differs remarkably between the two groups of managers. The slope of the PSM effect for managers who have experienced high levels of transformational leadership is positive whereas in cases of low transformational leadership the PSM effect seems to be even negative. A slope test (Hayes and Matthes 2009) reveals, though, that only the slope for the group that has experienced high levels of transformational leadership is significantly different from zero ($p < 0.01$). This implies that the moderation effect is neither truly monotonic nor

non-monotonic. Though both slopes are differently directed, only one is significant, and there does not seem to be a clear pattern for low levels of transformational leadership. We can conclude that transformational leadership makes only a substantive difference when it is experienced at a high level. A calculation of marginal effects shows us more specifically that leaders have to score higher than 21 on our transformational leadership scale, which ranges between 5 and 35, in order to significantly increase the effect of PSM on performance data use. This in turn means that low levels of transformational leadership do not significantly attenuate the effect of PSM on performance information use.

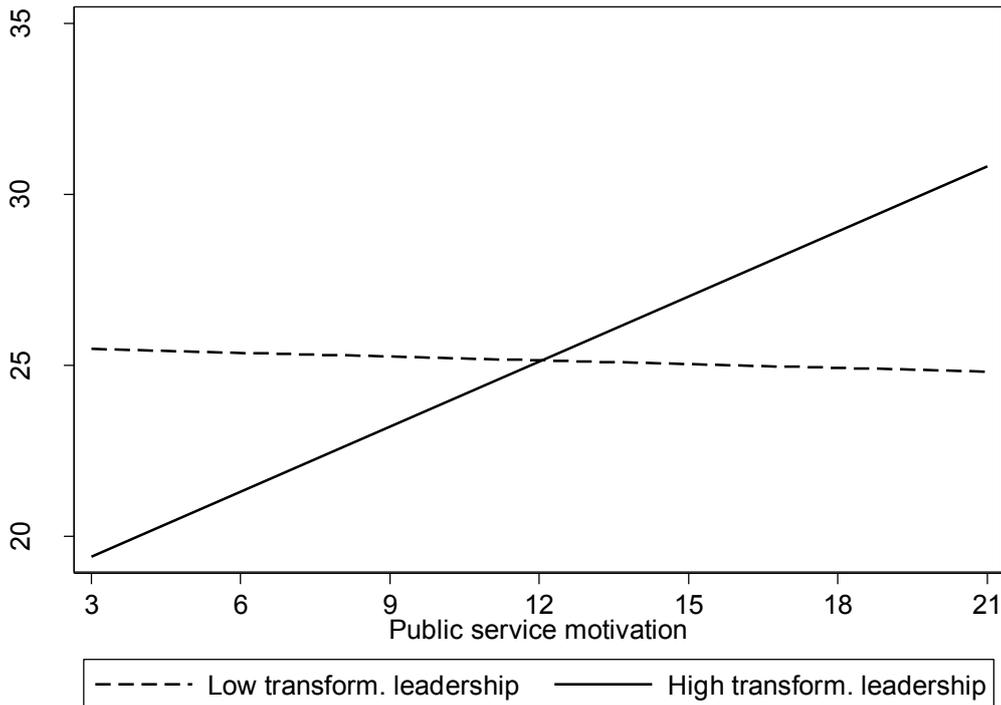


FIGURE 1: *The effect of PSM on performance data use moderated by the supervisor’s transformational leadership skills*

Readers might wonder whether the suggested PSM-leadership fit is a mediation rather than a moderation effect. Thus far, we have stated that we expect PSM-driven managers to be more likely to engage in performance data use if they work under transformational supervisors when compared to managers who do not experience this type of leadership. In statistical terms we proposed that the relationship between PSM and data use is positively moderated by the existence of transformational leadership. However, it would also be possible that we have observed a mediation effect similarly to what has been suggested by Park and Rainey (2008) and Wright *et al.* (2012). Here, PSM-driven managers and transformational leaders would not only be considered a good “fit” but we could model the following indirect causal effect: If agencies experience more transformational leadership over a longer period of time, their managers will have a stronger PSM-orientation which in turn leads to an increase in performance information use. We tested such an indirect effect but found no support. To validate that effect, according to Baron and Kenny (1986) as well as Frazier *et al.* (2004), predictor, mediator, and outcome variables

all have to be significantly correlated. However, as table 1 shows we miss the important correlation between predictor and mediator, which would imply that more transformational leadership causes more PSM. Since the leadership variable is also insignificantly related to data use if we control for other factors (see table 2 again), transformational leadership seems to be what Sharma *et al.* (1981) have labelled a “pure” and not “quasi” moderator, which is an interesting point for future modelling approaches. Hence, the effect of leadership on the performance of an extra-role behaviour like purposeful data use is not direct but occurs only when transformational leaders work with employees who generally embrace pro-social values.

With regard to our control variables, we found that as expected highly developed measurement systems positively foster the use of performance data. A significant negative effect could be observed for internally oriented services. A manager’s experience tends to have a negative influence (at levels of 6 % and 11 %) whereas all other control variables have turned out insignificant.

6 Discussion

This article has provided evidence that managers with a distinct PSM are more likely to engage in performance data use and thereby corroborated prior research (Moynihan and Pandey 2010; Moynihan *et al.* 2012a). It has furthermore shown that this effect is stronger in cases where managers have experienced transformational leadership by their direct supervisors. However, only high levels of transformational leadership make a difference. That is, transformational leaders can motivate additional extra-role behaviour on the part of PSM-driven managers, but poor transformational leadership does not hurt the positive PSM effect.

The article also showed that the link between transformational leadership and PSM is not always causal but their “fit” is still beneficial. Unlike other studies (Park and Rainey 2008; Wright *et al.* 2012), we did not find support for a significant effect of transformational leadership on the level of the subordinates’ PSM. This does not mean that we generally question mediating effects which are based on this causality. Instead, we suggest that a fit of transformational leaders and PSM-driven managers can result in positive organizational outcomes even when both variables are not causally linked. Transformational leaders seem to provide what PSM-driven managers look for and are therefore able to strengthen their followers’ engagement in extra-role activities, such as the use of performance information.

The missing direct effect between transformational leadership and the managers’ data use is not entirely surprising (Moynihan *et al.* 2012b) but needs to be explained. We hypothesized that transformational leaders seek improvements in their organizations and might thus be interested in performance information. However, we only studied the use of performance information produced through systematic routines of data collection and reporting. This excludes important performance feedback which public managers collect on an ad-hoc basis, through talks or observational tours and which they might passively receive rather than actively pursue (Mintzberg 1974; Kroll in press). Transformational leaders might initiate a dialogue about their organization’s impact but such a dialogue does not have to be based on

aggregated, quantified information from systematically produced performance reports. Transformational leaders might have a preference for non-routine feedback but such a hypothesis clearly calls for further research.

This study also contributes to a cross-national theory of performance data use as it provides a first test based on data from a country in continental Europe. This is why the findings for our control variables also add value to performance management research. Our study confirms once more that a mature performance measurement system has a positive effect on the managers' data use. A significant negative effect was found for internally oriented services, a result that corroborates scattered earlier findings (Moynihan *et al.* 2012b). This is evidence against a hypothesis stating that it is easier for internally oriented services to identify meaningful performance indicators which would make the use of the data more likely. Instead, it seems that services which focus on external clients are under greater external pressure to justify their decisions and might use performance information for this purpose. Hence, external pressure seems to outweigh difficulties that managers of cultural, social, or youth departments might have when it comes to the formulation of suggestible outcome measures.

The observation that the manager's experience tends to be a negative influence is an interesting addition to prior research which reported insignificant but also scattered negative effects. If experience matters, its impact seems most likely to be negative (Moynihan and Landuyt 2009, for similar findings with regard to politicians see Askim 2009). Based on this, one can theorize that more experienced decision-makers have access to alternative sources of information which could lead to performance reports being less important for them.

The insignificant results of this article mainly confirm the findings from studies which were based on data from the United States. Those articles reported for variables, such as an organization's size or financial situation, at least as many insignificant findings as significant ones (for detailed references see Kroll 2012). More surprising are the null results for developmental culture. Though these do not seem to be Germany-specific (de Lancer Julnes and Holzer 2001; Taylor 2011), they contradict most prior research and should be interpreted with care. This is true for all insignificant effects reported in our article but particularly for those which are in contrast with the results of prior studies. Due to a moderate sample size, effects of small magnitude are less likely to achieve statistical significance which is certainly a limitation of this study. Another limitation is that we mainly used measures developed in an Anglo-American context and adopted them to the field of German local government. As most of our measures showed at least a reasonable reliability and validity, we suggest not overestimating the potential for distortive contextual effects. We have argued that our indirect measure of a PSM-leadership fit is superior to direct approaches. At the same time, we have to admit that even our indirect construction is based on perceptual assessments that stem from the same information source. Though we aimed to address and discuss possible problems of data collection and analysis in our method section, the usual shortcomings of survey-based cross-sectional approaches also apply to this article.

7 Conclusion

This article has argued that performance information use by public managers is likely if they are driven by a public service motivation and work under transformational supervisors. We have suggested that this moderation effect can be explained by the idea of a needs-supply fit and its complementary character. Supervisors and followers do not have to be alike in all their characteristics but leadership style and follower motivation should match. We proposed that PSM-driven managers “fit” well with transformational leaders because these managers seem very receptive to this style of leadership which, in turn, intensifies the managers’ job motivation. The article’s empirical section showed that there is support for our argument. Transformational leadership can strengthen the effect of PSM on performance information use. However, if supervisors are perceived as poor transformational leaders, this does not significantly hurt the PSM effect on data use. In other words, we found strong support for a stable PSM-baseline effect that can be increased but not seriously attenuated.

Our findings have three major implications. First of all, performance information seems to be regularly used if public managers are intrinsically motivated. This implies the following for the configuration of performance management systems: If we want public managers not only report performance data but actually make use of them for steering purposes, managers need to be convinced that these data will help them to improve the services they provide. For this purpose, powerful narratives, best-practice examples, and workshops from practitioners for practitioners could be useful instruments. Secondly, the performance of extra-role behaviour, such as using performance information purposefully, can be increased if PSM-driven managers are led in a transformational way. This highlights the fact that successful performance management is not only a function of improving data quality and reporting formats. Instead, performance targets need to be linked to higher goals and values in order to make performance information meaningful for civil servants. Thirdly, this article provided insights about the nature of transformational leadership in public administration. Though this behaviour is often generally associated with positive organizational outcomes, our study emphasized the contingency of this factor. This leadership style seems to appeal to managers who are open to the ideas of higher values, serving the community, and making a difference through their every-day work. For public management practice this implies that transformational leadership can be particularly impactful in areas where civil servants highly identify with their clients, where they are able to perceive their work’s societal impact or where public tasks are appealing enough to intrinsically stimulate the motivation of the administrators performing them. It might be less influential where followers are primarily motivated by extrinsic rewards.

Further research should elaborate on the role of leadership as an important moderator of PSM. Research on the PSM-fit could explore to what extent transformational leadership can increase the PSM effect on various beneficial outcomes and behaviours. Furthermore, it would be valuable to test how PSM interacts with other leadership styles, such as transactional (Bass 1985) and authentic leadership (Avolio and Gardner 2005) or with different leader-member exchange configurations (Graen and Uhl-Bien 1995).

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Appendix: Measures

Variable	Operationalization
Performance information use ($\alpha=0.91$)	I use performance information ...to make better informed decisions. ...to track goal achievement. ...as a basis for discussing improvements. ...to find out what works and what doesn't. ...to communicate the work of my division externally. ...to communicate the work of my division within the city administration. (1 = never ever, 7 = very often)
Transformational leadership ($\alpha=0.90$), adapted from House (1998)	My supervisor ...clearly articulates his/her vision of the future. ...leads by setting a good example. ...challenges me to think about old problems in new ways. ...says things that make employees proud to be part of the organization. ...is genuinely concerned about employee growth and development. (1 = strongly disagree, 7 = strongly agree)
Public service motivation ($\alpha=0.56$), adapted from Perry (1996)	I unselfishly contribute to my community. (public interest) To me, patriotism includes seeing to the welfare of others. (compassion) Making a difference in society means more to me than personal achievements. (self-sacrifice) (1 = strongly disagree, 7 = strongly agree)
Internally oriented task	Which city department are you working for? (1 = organization and staff management, finance, facility management; 0 = citizen service, cultural issues, building authority, social welfare, and youth welfare)
Managers' experience	For how many years have you been working for your current city administration? (metric)
Public administration background	In what field have you been trained? (1 = public administration, 0 = others)
Measurement system maturity (formative index)	We measure performance. Performance information (PI) is formally reported. PI is regularly reported. PI appears in the budget plan. PI is reported for periods of less than a year. Performance developments are displayed using time series. PI is used to measure the achievement of "improvement targets". PI is merged in a data basis. We have a guideline that helps us to formulate performance indicators. The quality of the PI is regularly monitored. We are involved in a PI-based benchmarking with other cities. We have a hierarchical PI system with KPI on the top and specific indicators at the bottom. All PI is integrated in our overall strategic management plan. (1 = yes, 0 = no)
Developmental culture ($\alpha=0.87$), adapted from Zamamoto and Krakower (1991)	The city administration is dynamic and entrepreneurial. People are willing to stick their necks out and take risks. The glue that holds my city administration together is a commitment to innovation and development. The staff shows great readiness to meet new challenges. (1 = strongly disagree, 7 = strongly agree)

Large cities	How many people inhabit your municipality? (1 = more than 400,000; 0 = others)
Financially stressed cities	Is your municipality subject to a budget security regime? (1 = yes; 0 = no)