

**Responsiveness to Reform Values:  
The Influence of the Environment on Performance Information Use**

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## **Abstract**

Administrative reforms encode a set of behavioral expectations for bureaucrats to follow. We argue that scholars can usefully contribute to understanding accountability by studying if bureaucrats follow these expectations, and what factors encourage such responsiveness to reform values. To demonstrate this approach, we examine performance information use as a behavioral measure of responsiveness to results-based reforms. Using a sample of Texas schools' superintendents, we find that general openness to the environment goes hand-in-hand with responsiveness to reform values. We propose that such a pattern will hold when reform values align with environmental preferences. The perceived influence of stakeholders, networking with stakeholders and reliance on partnerships all positively predict performance information use. Environments marked by student diversity and stakeholder conflict also correlate with higher use of performance data. We also find that capacity, less managerial experience, and a unified organizational culture correlate positively with higher reported performance information use.

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Different administrative eras are characterized by evolving expectations for how a public servant should behave (Mosher 1982; Frederickson 1980). Performance management doctrine plays a central role in articulating contemporary expectations of a new type of public servant: mission-focused rather than rule-bound, innovative rather than stifled (Dubnick and Frederickson 2010). The link between performance systems and the expectation of a performing public servant rests on the assumption that public officials will habitually use performance data, and in doing so make better decisions. In the same way that we observe that public employees are attentive to professional values (Romzek and Ingraham 2000), reformers want them to behave in accordance with the values of their reforms. In the case of performance management, this means using performance data.

In this article we argue that responsiveness to reform values represents an important way to study administrative reform since it is a form of accountability. Accountability has many dimensions. It may seem unnecessary to elucidate one more, and some may argue that our approach is at odds with classic notions of accountability. But studying accountability to reform values has a practical dimension. It informs policymakers on how a reform might be better implemented. While there is now compelling evidence that performance management systems have failed to meet the lofty expectations of its advocates, or have resulted in perverse consequences (Heinrich and Marschke 2010; Moynihan 2008; Pollitt 2011), we have much less evidence on what might encourage public employees to use data. Even if one disagrees that performance information use represents a true measure of accountability, it has significant importance as an interim measure of the progress of performance reforms (Moynihan et al. 2011; Van de Walle and Van Dooren 2008). Understanding what fosters performance information use has been described as the “big question” for research in this area (Moynihan and Pandey 2010).

Accountability to reform values also has a democratic accountability component. Dubnick and Frederickson (2010, 146) have made the case that the: “promise of accountability through performance

measurement is the fashion of the day” but conclude that performance management as having broadly failed to offer democratic accountability (see also Pollitt 2011; White 2012). This claim is broadly accurate, but we argue that responsiveness to reform values matters to democratic accountability since it captures whether public servants are behaving in ways that elected officials deem as important. This basic claim about the value of studying of responsiveness to reform values is a normative one that we cannot test. Instead, we illustrate the value of such an approach through an empirical application by testing a model of performance information use. The central theoretical claim of this model is that responsiveness to the reform value of performance information use is shaped by the organizational environment. In the area of education, this environment has generated a strong demand for performance information use, and openness to the environment should reinforce such use. Using a dataset that captures the perspectives and context of Texas school superintendents, we find that the perceived influence of stakeholders, networking with stakeholders, and reliance on partnerships, all positively predict performance information use. Environments marked by student diversity and stakeholder conflict also correlate with higher use of performance data. In this particular context, the environment seems to reinforce responsiveness to reform values.

### **Responsiveness to Reform Values: The Example of Performance Information Use**

There are a variety of ways to consider accountability. For example, Koppell (2005) points to transparency, liability, controllability, responsibility and responsiveness as key criteria. In this article we offer a novel way to consider accountability as responsiveness, which has traditionally referred to fulfilling a substantive expectation. We expand the notion of responsiveness as a form of behavior consistent with the values of a reform. In the case of performance reforms, we focus on a relatively simple behavioral measure to judge the effects of performance systems, which is managerial use of performance

information. This assumes a purposeful effort to use performance data in ways consistent with the expectations of the public and reformers.

A variety of scholarship examines how bureaucrats respond to the values of elected officials. A good deal of this work takes an agency theory perspective that focuses less on reform values than with the effort to deal with the assumed shirking or ideological divergence of bureaucrats (Gains and Johns 2010). While work on the administrative presidency is more explicit in considering value alignment between Presidents and bureaucrats, such work tends to emphasize the use of structural and selection solutions rather than reform efforts (Moynihan and Roberts 2010, but see Dull 2006 for an exception). There is little research that actually looks explicitly at values embedded in reforms and examines what factors lead to the achievement of these values. Moon and DeLeon (2001) offer an exception, suggesting that reinvention values are widely held by municipal administrators and influence the types of reforms they adopt. Other research in performance management tends to show that agents strategically resist the goals of results-based reform, often to the disservice of clients (Heinrich and Marschke 2010; Soss, Fording and Schram 2011).

Considering accountability in terms of reform values is not entirely new. Accountability systems, whether by design or not, institutionalize values that inform the discretionary choices of administrators (Romzek and Ingraham 2000). For example, the work of Romzek and co-authors has studied how professional values operate as an accountability mechanism. The logical, though sometimes implicit, end of governmental reform efforts is that the behavior of public actors has to change in a way that reflects a new and improved value set that citizens wish to see pursued. For example, those who have argued for reforms that provide for social equity (Frederickson 1980) or faithfulness to legal values (Lynn 2009) offer competing images of how a public servant should behave. The most wide-ranging demonstration of this point comes from Mosher's (1982) history of the epochs of American public administration,

demonstrating that different phases established different means of selection, administration, and rules that were centered on a normative vision of the public servant as reflecting a particular set of values. Our current era has been characterized as governance by performance management, reflecting the central role of performance systems in contemporary beliefs about public servants (Moynihan 2008).

Such broad-stroke characterizations of the means by which the public and elected officials express values intended to shape bureaucratic behavior is inevitably an oversimplification. There is, for example, no unitary public that sends a clear message to elected officials, and these officials are more than simple translators of public wishes. However, our assumptions are consistent with models of democratic accountability – such as agency theory, or the logic of governance (Lynn, Heinrich and Hill 2001) – commonly used to capture these complex relationships.

While behaviors articulated in reforms have a means-end importance in providing for a desired outcome, they also have an intrinsic importance as a normative statement of how a public servant should act. For example, Mosher (1982) suggests that Progressive reformers seeking to cleanse government of corruption were primarily driven by a moral imperative and only secondarily sought efficiency goals. The behavior of the official was more important than the outcome that followed. Behavior is also important as a procedural standard for accountability because the ultimate impact of public action for outcomes is often unclear. A public desire for results-based reforms is consistent with popular perceptions of an inefficient government where employees do not face the pressures assumed in the private sector. While one might criticize the grounding of such beliefs, they frame a vision how public employees should behave. Elected officials who adopt performance management reforms often focus explicitly on performance information use as a key variable (Moynihan and Lavertu 2012), presenting it as a response to popular discontent with government.

The emphasis on performance is a marked feature of the policy context and setting we study in this article: K-12 education in the state of Texas. In recent decades there has been an increase in educational reforms pushing for increased accountability from schools, administrators and teachers. This has generally taken the form of standardized testing of student performance. While standardized testing in education in the United States is not new, there has been a significant increase in its use and, more notably, in its connection to the concept of accountability in education. At a national level, the push for accountability systems is best captured in the Elementary and Secondary Education Act of 2002, better known as the No Child Left Behind Act (NCLB). This system was largely based on an accountability system developed in Texas through a series of testing systems beginning in the late 1970s. These testing systems progressively increased consequences for administrators and schools. In 1993, the Texas Legislature mandated a school accountability system for all public schools and some districts (most notably Houston and Dallas) began to directly link incentives - both positive and negative - with performance on state tests. By the late 1990s, these state tests were high-stakes for both students (who could not graduate without passing an exit exam) and for administrators, some of whom were fired for low performance (McNeil et al. 2008). Under NCLB, schools that fail to make annual progress targets face the threat of state takeover. The Texas system became the model for education reformers in the George W. Bush administration, many of whom were Texas transplants, including both of Bush's Secretaries of Education.

Other characteristics of the Texas education system amplify attention to performance. School administrators lack tenure or collective bargaining rights, and face significant pressure to perform well on annual performance contracts. While these contracts and pressures have been in place since the early 1990s, the requirements of NCLB have intensified the pressures they face to meet state and federal expectations on state tests. Thus, even those administrators who in principle disagree with accountability

systems based on high-stakes standardized testing still face pressures from parents, school boards and the state and federal government. Hence, in contemporary K-12 education in the state of Texas the concepts of accountability and performance are inseparable.

This article puts stakeholders at the center of the environment, examining their relative influence, the nature of their relationships, reliance on partners, and networking. The next sections present the ways in which we conceptualize our model. We employ data from the Texas Superintendent Survey conducted in the 2009-2010 school year. This survey asks Texas public school superintendents a variety of questions regarding management styles, priorities, and behavior. Though the data are well-studied, we draw from new survey items on performance information use that are previously unexamined. We supplement these data with data from Texas public school districts from the 2008-2009 school year.

### **The Role of Stakeholders**

Dubnick and Frederickson (2010) argue that performance management fails as a form of accountability because it is at odds with basic political processes, and represents an executive tool of control with little broader relevance. But even if performance management is primarily used as an executive branch tool, this does not preclude the possibility that it is satisfying to some degree the normative values of purposeful performance information use that the public and reformers seek. It is also possible that the characteristics of the actors in the broader environment shape the degree to which public actors use performance data – that the environment serves to reinforce or undermine the normative expectations established in reforms. To pursue this question we can look at the actions of stakeholders in utilizing performance systems, or the impact of stakeholder influence on policy decisions or managerial use of data. In this article, we focus on the latter.

Empirical work has demonstrated links between other aspects of the environment and performance information use. Some of this work relates to political ideology and partisan competition. Evidence from U.S. state governments and Norwegian municipal governments associates performance information use with more liberal political settings (Askim et al. 2008; Bourdeaux and Chikoto 2008; Moynihan and Ingraham 2004). Political competition between parties has been found to be positively associated with use (Askim et al. 2008). Perceived public interest in accountability or performance data are associated with greater use (de Lancer Julnes and Holzer 2001; Moynihan and Ingraham 2004). But overall, there is not a great deal of evidence on how stakeholders in the environment shape managerial performance information use.

Stakeholder groups play a powerful role in the political process. Stakeholders can shape organizational reputation, resource availability, policies and programs selected, and agency leadership (Carpenter and Krause 2012; Chubb and Moe 1990). While individual citizens often tend to be uninformed about performance systems, stakeholders, particularly well-organized interest groups, are more likely to have the resources to examine and utilize data, and enjoy the trust of their members (Pollitt 2011). As the environment has come to demand that agencies justify themselves via performance data, public officials must increasingly assume that part of their role is to use performance data. Stakeholders deserve special attention partly because they solicit strategic responses from managers – while managers cannot change many aspects of their environment, they can make choices about how they interact with stakeholders. Performance indicators may be perceived as central to the maintenance of critical resources granted by the environment, directly connected to resource provision (Gilmour and Lewis 2006), and indirectly to reputation and legitimacy (Bevan and Hood 2006).

We focus on the question of whether stakeholder characteristics and relationships might affect use. In particular, we pursue two questions: First, how does the influence of and interaction with stakeholders

affect use? Second, how do characteristics of the stakeholder environment (in terms of complexity, heterogeneity, and conflict) affect use? We examine a set of stakeholder variables distinct from those discussed in the existing literature on performance information use. Appendix 1 describes how each variable is measured.

The arguments outlined above provide the logic for a simple hypothesis that *stakeholder influence* will affect performance information use. If stakeholders care little for performance data, the direction of the effect will be negative. But if they value these data, the sign should be positive. In the case of Texas Schools, or education more generally, the relative prominence of performance scores makes it likely that stakeholders will care for performance information use, and therefore their influence should be associated with higher levels of managerial use (Abernathy 2007; Nicholson-Crotty, Theobald and Nicholson-Crotty, 2006).

H1: Stakeholder influence will increase the rate of managerial performance information use.

As governments have been asked to measure performance, they have also been asked to rely more on third-party actors to deliver results. Any system of accountability that demands greater control of performance, while simultaneously devolving authority, is likely to be characterized by difficulties and problems (Heinrich and Marschke 2010). Nevertheless, principals who find themselves reliant upon more agents may look to performance data as a means to manage those relationships. The data may be an imperfect control, but is often a central part of contracting mechanisms designed to maintain accountability. From the perspective of school superintendents, they are both principals and agents; stakeholders in a national policy network, and dependent on new stakeholders in the form of partners. They may oversee and depend upon third parties, but are also subject to direction and control from parts of the local, state and federal governments, which will frequently come in the form of increased evidence

of performance. This network of partnerships is at least partly governed by performance systems, and may therefore foster greater use of performance data. To test this hypothesis, we ask superintendents the degree to which their district relies upon *partnerships*.

H2: Involvement in partnerships will increase managerial performance information use.

If simply being in a network of partnerships has an effect on use, so too should the active *networking* efforts of managers with different stakeholders. What we refer to here as networking overlaps a good deal with the older concept of boundary spanning. Research on boundary spanning suggests that it represents a mechanism by which public actors collect information from and respond to the insights of stakeholders, while establishing basic norms of trust and accountability (Williams 2002). Such actions could affect performance information use in contradictory ways. On one hand, to the degree that managers are focused on managing their external environment, they may be less able to devote time to internal management decisions. For example, Reich (1990) argues that public managers face a basic dilemma: they have a limited amount of time, and there is a basic tradeoff between being responsive and making decisions.

An alternative perspective suggests that networking might actually spur performance information use for a variety of reasons. First, networking gives stakeholders a chance to demand results-based accountability, thereby encouraging performance information use to improve organizational effectiveness. There is evidence that networking is positively related to performance in our empirical setting of Texas education (Meier and O'Toole 2003), but also policing (Nicholson-Crotty and O'Toole 2004), and local economic development efforts (Agranoff and McGuire 2003), which suggests that network actors are cognizant of performance goals. Meier and O' Toole (2003) portray Texas schools as a context where superintendents engage in networking to manage organizational resources offered by stakeholders who

care about performance. They describe superintendants of both high and low-performing schools as engaged in a stakeholder that is centered on notions of performance and what the Superintendent can do to improve it. Networking also gives agency managers the opportunity to use performance data to advocate for their program. Data can be used to defend the program against criticism, legitimate its need and effectiveness, and make the case for more resources (Van de Walle and Boivard 2007).<sup>1</sup>

H3: Higher levels of networking will increase managerial performance information use.

Next, we examine environmental complexity. Performance data are retrospective –an account of what has occurred in the past. Its utility for current decisions depends upon the future looking much like the past. Therefore, in highly complex and turbulent environments, performance data may have limited utility. On the other hand, environmental complexity may create a pressure upon managers to utilize any heuristics that can capture this complexity, or just create a sense of purpose, even if that sense is largely illusory.

Environmental complexity is measured in two ways.<sup>2</sup> The first is the superintendent's assessment of the district's complexity (*environmental complexity*). The second measure directly captures the variety of stakeholders by utilizing an objective measure of the racial and ethnic diversity of the student body (*student diversity*).<sup>3</sup> Arguably, more heterogeneous organizations deal with a wider and more complex array of competing interests and demands than do homogeneous ones (Pitts et al. 2010). Student diversity, then, serves as a proxy for the complexity of issues school administrators face. In examining state manager use of performance data, Bourdeaux and Chikoto (2008) find that general population heterogeneity is associated with performance information use. This suggests that the press of claims that different groups make encourages managers to be attentive to performance information. In the area of education, different racial and ethnic groups tend to perform differently with respect to performance data

(e.g. Meier and Stewart 1991; Meier and O' Toole 2003). The traditional achievement gap between minority and white peers has placed greater pressure on the educational system to perform better. Population heterogeneity is, for example, associated with the diffusion of one educational reform in the form of charter schools (Stoddard and Corcoran 2007). It is plausible that such pressures cause administrators in highly diverse districts to pay closer attention to performance data than those in homogenous districts. As these groups represent a bigger portion of the whole population, their ability to exert pressure on administrators to manage the performance of their group is likely to increase. The administrator must focus on the performance of different groups, and consider how to alter management processes to enhance that performance. NCLB reinforces the pressures of heterogeneity in education mandating school districts to disaggregate student performance by racial and ethnic groups.

H4: Environmental complexity will increase managerial performance information use

The nature of the effect of stakeholders on performance information use may also depend upon the relationships among stakeholders. It could be that managers who enjoy a settled and non-contentious environment are better able to use performance data relative to managers whose time is dominated by trying to manage external conflicts. But we might expect that more contentious environments might encourage performance information use. Disagreement among stakeholders may result in more intense pressure on managers. Managers may experience closer scrutiny, and therefore seek to make management decisions consistent with performance data. Empirical evidence on *stakeholder conflict* in other contexts is mixed. Jennings and Hall (2011) find that political conflict undercuts the use of evidence-based information across state governments. At the federal level Dull (2009) finds that perceived political conflict between stakeholders is a significant negative predictor of performance information use in models estimated using 1997 federal survey data, but not in a later wave of the survey. Using later survey data

from the same source, but with a different model specification, Moynihan and Lavertu (2012) find that perceived political conflict is positively associated with some measures of performance information use.

H5: Stakeholder conflict will affect managerial performance information use.

### *Organizational and Individual Control Variables*

We control for a number of organizational variables. These include the degree to which superintendents regard test scores as important relative to other, less widely-measured, educational issues (*test focus*). This Texas system entails mandatory testing starting in the third grade and culminates in an exit exam in high school that students must pass in order to graduate. The Texas Assessment of Knowledge and Skills was introduced in 2003 as the state's primary assessment tool. Superintendents were asked to rank the most important problems in their district. If administrators selected either compliance with NCLB or student performance on the Texas Assessment of Knowledge and Skills exam, they were given a score of one; if they selected other educational issues not subject to state or national reporting (bilingual education; college preparation; vocational education; physical education; nutrition issues; and discipline issues), they were coded as zero.

We control for aspects of perceived organizational culture that might be associated with performance information use. Organizational learning research argues for the routine incorporation of input, ideas, and knowledge from a variety of sources (Fiol and Lyles 1985). A key learning characteristic, therefore, is openness to different sources of information. Here we examine this openness in two ways. First, we measure the degree to which superintendents are willing to take advice from their senior managers (*learn from senior managers*). Second, we measure the degree to which the superintendent sees his or her school district as being an *early adopter* of new ideas and practices. Next

we examine the degree to which there is a shared or common culture. Cook and Yanow (1993) suggest that a truly cultural perspective on learning centers on the intersubjective meaning experienced by organizational actors, reflected in tacit knowledge. Shared beliefs and norms are therefore the central way in which culture matters to learning (Senge 1990). We measure culture in terms of shared beliefs, asking superintendents the degree to which their district pursues a common culture and identity among employees (*shared culture*).

We control for central administrative capacity. Using performance information is an additional task for most organizations, and one which is more likely to occur when organizations have adequate resources (Moynihan 2008). Because our unit of analysis is school superintendent, we measure *central administrative capacity* as the percent of total staff assigned to central administration (i.e., district level) as opposed to campus level staff.

At the school district level, we control for the size of the district in terms of total *student enrollment* (in thousands), the *total revenue per pupil* (in thousands of dollars) as well as the average class size (*student-teacher ratio*). At the individual level, we also include the *educational level* and the number of years the superintendent has been employed in the district (*experience*).

## **Data and Method**

The data for the empirical analysis come from two sources: the 2009-10 round of the Texas Superintendent Survey, and the Texas Education Agency. The Superintendent Survey is the fifth in a series of superintendent surveys administered to Texas public school superintendents beginning in 2000. This wave of the survey was mailed to superintendents from 1,263 school districts, with 644 responses, producing a response rate of about 51 percent.<sup>4</sup> We supplement these survey data with data from the

Academic Excellence Indicator System 2008-2009 school year collected by the Texas Educational Agency, which contains basic data on school district demographics, staff, and financial characteristics.

The dependent variable for this analysis is performance information use. To measure this, we use six survey items asking about different forms of performance information use. The Superintendent Survey asks respondents to what extent they use performance data for: personnel decisions, strategic decisions, day-to-day management, stakeholder advocacy, resource allocation, and making services more efficient (see Appendix 1 for exact wording). We also create a composite scale based on a factor analysis. The six items load on a single factor with an eigenvalue of 3.43 and have a Cronbach's alpha of 0.85. The final composite scale ranges from -2.96 to 1.4. Tables 1 and 2 present descriptive statistics for all the variables used in the analysis.

*Insert tables 1 & 2 here*

Given that our primary dependent variable, the composite scale, is a continuous scale, we employ an ordinary least squares regression to estimate the model. The model shows almost no collinearity between the independent variables, with a mean variance inflation factor of 1.23. Heteroskedasticity was only problematic in models 2-7 (i.e. the dependent variables that are the components to the factor score); hence, robust standard errors are used for these models. The dependent variables in models 2-7 are ordinal, but the results from ordered logistic regressions were virtually identical to OLS in terms of variable direction and significance. For consistency and ease of interpretation, we therefore report OLS results for all models.

Our final model includes 516 cases (128 cases were dropped due to missing data), representing over 40 percent of all Texas public school districts and over 80 percent of districts that responded to the Superintendent Survey. There are no statistically significant differences between cases included and not included in the model in all but four variables, namely, *central administrative capacity*, *student diversity*, *total enrollment*, and *superintendent experience*. The differences in these variables, while statistically significant, are substantively small and thus should not be problematic.<sup>5</sup>

## **Results**

We test our variables using a summary model based on an underlying factor score, as well as six additional dependent variables that contribute to the factor. In reporting the results, we focus primarily on the results of overall factor score model. The basic findings largely hold for the other models, though we note exceptions.

Almost all of the variables dealing with stakeholder role and characteristics have significant associations with superintendent performance information use. The results support the general proposition that openness to environmental influence will increase the use of performance data among out respondents. When superintendents view stakeholders as having a greater influence on their agency, they report that they use performance data more, supporting hypothesis 1. This is true in all models, except the one testing performance information use for personnel purposes.

As managers engage more with their environment, this is associated with higher performance information use. Reliance on partnerships and higher levels of networking are both associated with performance information use, consistent with hypotheses 2 and 3. One frequent criticism of networks and other collaborative arrangements is that they do not offer a model of accountability that is equivalent to a

hierarchical approach. The findings here do not refute this view, but do suggest that actors who report a higher level of reliance on and engagement in collaboration also report using performance data more.

There is mixed evidence on the role of environmental complexity, the subject of hypothesis 4. The measure of perceived environmental complexity is not significant. However, our objective measure of environmental complexity, student diversity, is significantly associated with higher levels of performance data use. That is, superintendents of racially and ethnically homogenous districts are less likely to make use of performance data than counterparts in heterogeneous ones. Given the general pressures to reduce the educational achievement gap among groups, this finding makes particular sense in the area of education.

Hypothesis 5 proposed that conflict among stakeholder relationships would influence performance information use, and the results show positive associations between stakeholder conflict and performance information use. Together, these findings suggest that heterogeneity and conflict within the environment do not have to be at odds with the use of performance measures, but in fact seem to increase it, at least among our respondents of school superintendents. In general, competing claims among clients and tensions between stakeholders may make the life of managers more difficult because they offer competing signals as to what the organizational priorities may be (Meier and Bohte 2007). But when public managers must respond to the disparate concerns of multiple groups, performance information offers a way of doing so. It may be the case that in less contentious environments, managers enjoy a greater degree of deference and autonomy from stakeholders, and feel less pressure to use performance data.

Since one of our dependent variables, *advocacy*, represents the use of data to advocating to stakeholders, we might expect that the role of stakeholders matter differently for this particular form of performance information use relative to other forms of use. For example, Brunsson (1989) argues that

organizations espouse one set of beliefs externally, but rely on different information for internal operations. But broadly, the results demonstrate that the relationship between stakeholder variables and performance information use is not driven solely by managerial desire to use performance data for advocacy purposes. The environment matters for performance information use for internal management activities. That said, there is enough difference in the results for the advocacy model to suggest it merits separate consideration in studies of performance information use. Consistent with some of the dependent variables that reflect internal use of performance data, advocacy is associated with stakeholder influence, reliance on partnerships and networking. But in other ways it is different. Advocacy is associated with reliance on senior managers for advice, suggesting a craft element to using data for advocacy. While student diversity may compel inclusion of performance data in making strategic or budget decisions, it appears to matter little for advocacy. Finally, stakeholder conflict does not engender performance information use for advocacy in the same way it does for other types of use.

Our control variables provide some interesting findings in their own right. There is, perhaps surprisingly, no correlation between the degree to which superintendents say that they prioritize NCLB or test scores and their use of performance data. This suggests, at the very least, that performance information use for these respondents is not simply limited to test scores, but involves other goals and data. It may also suggest that superintendents do not believe they can affect test scores using the standard management approaches reflected in the dependent variable. Centralized administrative capacity is a positively and significantly associated with performance information use.<sup>6</sup> Superintendents in better-resourced administrations enjoy greater capacity to use performance data. However, such central administrative capacity may come at the expense of capacity lower in the organization, within schools, and could plausibly be associated with lower performance information use among lower-level employees.

Having a unified culture is a significant correlate of performance information use. In districts that put an emphasis on a common identity and culture, superintendents say they use performance information more. A unified culture means that employees within the organization have a common understanding of mission, and norms. From an organizational learning perspective, a unified culture serves to encode, store, and communicate organizational knowledge to the individual decision-maker more effectively than a fractured or inchoate culture does. From the perspective of organizational politics, a unified culture may also empower senior managers to make decisions based on performance data. As Barnard (1938) noted, executives' authority to make decisions depends very much on the permission of agency members, and a unified culture provides that permission. If such managers do not need to view each decision through the lens of intra-organizational tensions, this allows them to incorporate other factors, such as performance data, to guide their decisions. However, there are risks with an overly unified culture. It can lead to groupthink, where organizational norms prevent members from questioning poor ideas (Janis 1982). Other organizational controls are either marginally significant (whether the superintendent perceives the district as an adopter of new ideas), or not significant (relying on the advice of senior managers).

Superintendents with more experience working within a district report using performance data less. This may reflect the fact that newer employees are more open to performance management techniques, or that more experienced employees feel they can make decisions and take action without referring to data. Among district controls, we find that higher average class sizes is associated with greater use of performance data. While this variable related to the overall factor score only at statistically marginally levels, it is significantly correlated with superintendent use of performance data for efficiency purposes. Since increasing class sizes represents a more sparing use of inputs per student, this connection to efficiency makes sense, though the causal direction between the variables may run opposite to the way

specified in the model, i.e. superintendents who use data for efficiency purposes may encourage larger classes. Other controls are not statistically significant.

### *Limitations and Future Research*

There are, of course, limitations to acknowledge, but the caveats we note below largely suggest the need for additional research to demonstrate how broadly the findings hold, rather than invalidate the results. Managers in different policy areas face different environmental pressures that affect their performance information use (Frey 2010). We focus on education, which along with health, has been identified as a policy area that is most likely to be of interest to the public (Pollitt 2011). We also focus on school superintendents from one particular state, and generalizing to public managers more generally should be done with caution. Given the nature and structure of Texas school districts, our findings are most likely generalizable to similar organizations that have high levels of professionalization, are decentralized with a significant proportion of street-level bureaucrats, and where environmental actors appear to care about performance.

School superintendents face high levels of attention from stakeholders (Chubb and Moe 1990), and are expected to account for the performance of a politically salient function. In our sample of Texas school superintendents, the imperative to use performance data may simply be greater than managers better buffered from environmental concerns. In tasks where the public are less engaged, it is less likely to expect a relationship between stakeholders and managerial performance information use. It may also be the case that the results will vary by organizational level or role of the respondent, with higher-level officials more exposed to the environment. In other settings where there is a conflict between the goals of environmental actors and the values elucidated in a reform, our results may also not hold. But we assume that in most policy settings, environmental actors can exert influence both on policymakers and

administrators, and there will be therefore generally be a correlation between reforms and the preferences of stakeholders.

A clear potential research question is how the degree to which public organizations are closed or open systems moderates the impact of stakeholders on performance information use. Here we show that even controlling for function and managerial role, variation in the environment matters to reported performance information use. It seems likely that across different types of functions and environmental settings, the variation and influence of the environment may be even greater. This article suggests a variety of factors to investigate: environmental complexity, relationships among stakeholders, stakeholder influence, reliance on partnerships and networking.

There are also measurement limitations. Even though we examine six items measuring different aspects of performance information use, the items are still relatively broad. For example, it is possible that two respondents who score at the same level on using performance data for personnel purposes may be using the data in quite different ways. To better understand the question of “how” data are used, future research should look for more fine-grained dependent variables, or utilize a qualitative approach. A qualitative approach could also help to better understand the causal mechanisms by which stakeholders influence performance information use.

Another data limitation is that the majority of the items we rely upon are self-reported. To some degree, this is unavoidable when dealing with individual performance information use, since individual cognitive processes are difficult to monitor. An alternative approach is to use an experimental model, where different amounts, content, and types of performance are provided to subjects, and their responses on real or hypothetical decisions compared to a control group (James 2011). The use of self-reported data create the possibility that what is driving reported performance information use are perceptions of the

environment, even if objective measures of the environment do not reflect these perceptions. But such perceptions are important if they shape attitudes and behavior, and should not be discounted even if they are at odds with objective environmental measures. Even so, we do find that some non-perceptual indicators we include – central capacity, diversity of the student population, and respondent experience – are associated with reported performance information use. It is also the case that many of the self-reported items rely on single items rather than indexes. While Wanous and Hundy (2001) suggest that single-item scales can reliably capture perceptions of moderately complex constructs, and most of the items utilized have been previously used in published studies, it would be preferable to have better-tested indexes of more complex constructs, such as culture.

Another concern is that the results are driven by common-source bias. Meier and O’Toole (2010) have tested the potential for common source bias among variables of this dataset and found that the measure of performance information use that serves as our dependent variable shows little potential for such bias. The results also do not seem to align with common source bias, since obvious perceptual measures – such as prioritization of test scores and NCLB– are not significant, even as non-perceptual measures are. In addition, the negative finding on stakeholder relations is at odds with common-source bias, which is usually characterized by positive relationships between perceptual variables.

## **Conclusion**

Administrative reforms communicate an image of how public servants should behave. They are the product of a democratic process that is intended to represent the beliefs of the public. Even if it is difficult to directly monitor that form of behavior implied by the reform, we argue that it is important to study such behavior since it represents a form of accountability to normative expectations about public employees. In our current era, administrative reforms call for public employees to actively use

performance data. There is considerable evidence that these reforms have had unanticipated consequences leading to goal displacement and gaming (Dubnick and Frederickson 2010; Heinrich and Marschke 2010), but there has been less attention to understanding what factors actually generate the type of purposeful behavior that reformers seek. Our approach has been to seek to explain what factors lead to responsiveness to reform values, which in this case took the form of performance information use.

We find that for Texas school superintendents, the nature of the environment matters a good deal for reported performance information use. The broad environment gave rise to demands for performance information use through reforms like the NCLB, and in this context we find that openness to the environment encourages such use. Such a pattern is likely to hold as long as key environmental actors also influence the creation of reforms. When this is the case, the influence of these actors is likely to reinforce responsiveness to reform values. Organizations may vary in the degree to which they negotiate with their authorizing environments and the importance of such negotiations, but it is a common and important activity for virtually all public organizations (Meier and Bohte 2007). Similarly, organizations may vary in the degree to which they engage in performance management, but again, it is near-ubiquitous. This article argues that there is an understudied empirical connection between these two common aspects of public sector life. The dominance of stakeholder variables in explaining performance information use is striking. Previous work has made clear that organizational actors do care about how performance data affect their external reputation (e.g. Bevan and Hood 2006), but has done little to examine how the role and characteristics of stakeholders might matter. Future work should better examine how these variables connect to one another.

## Endnotes

<sup>1</sup> To measure networking, we follow Meier and O'Toole (2003) and create a scale of managerial networking using factor analysis. Specifically, we examine the extent to which superintendents had contact with 11 different groups (see Appendix 1). These items all load positively on the first factor (eigenvalue = 3.48; Cronbach alpha = .78).

<sup>2</sup> In addition to these two measures we also included several other measures of complexity/homogeneity of the student body. Specifically, these were the percent of students who were low income, limited English proficiency (LEP), special education and gifted and talented. With the exception of gifted/talented students, the relationships were largely positive, however, none of these variables were statistically significant in any of the models. Alternatively, substituting percent black and percent Latino for the Blau diversity index produces statistically significant results similar to the Blau index. We chose to use the Blau index because it is more parsimonious and it better captures the concept of heterogeneity.

<sup>3</sup> Student diversity is measured using a Blau dissimilarity index where higher values indicate higher levels of diversity. We used the following formula to calculate student diversity:  $Student\ Diversity = 1 - [(proportion\ Latino\ students)^2 + (proportion\ black\ students)^2 + (proportion\ Anglo\ students)^2 + (proportion\ other\ students)^2]$ . A value of 0 represents complete racial/ethnic homogeneity, while a value of 0.75 (the highest possible value) indicates that all racial/ethnic groups are equally represented.

<sup>4</sup> These data include responses from 47 charter school superintendents, 26 of which are included in our final model. While charter schools can be considerably different from non-charter schools in terms of size and mission, our primary results are not affected by the inclusion of these charter schools. The only variable that is affected by in the inclusion of charter schools is *Student-Teacher Ratio*, which is not statistically significant if charter schools are excluded from the model.

<sup>5</sup> In comparing variables between included and excluded cases, the differences that are statistically significant are as follows:

Variable	Difference	SD	Diff/SD
Central Administrative Capacity	0.59	2.22	0.266
Student Diversity	-0.02	0.177	-0.113
Enrollment	-1.91	11.78	-0.162
Superintendent Education	-0.099	0.486	-0.204

Here we see that the largest difference is in *Central Administrative Capacity*, which is approximately one-quarter of one standard deviation of the variable – arguably a modest difference. Thus, we are confident that the results are not driven by case selection. Excluding these variables has not substantive effects on the other stakeholder variables.

<sup>6</sup> We also tested to see if centralization might have a non-linear impact but did not find evidence of this.

## References

- Abernathy, Scott F. 2007. *No Child Left Behind and the Public Schools*. Ann Arbor, MI: University of Michigan Press.
- Andrews, Rhys, George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker. 2011. Environmental and Organizational Determinants of External Networking. *American Review of Public Administration* 41(4): 355-374.
- Agranoff, Robert, and Michael McGuire. 2003. *Collaborative Public Management: New Strategies for Local Governments*. Washington, DC: Georgetown University Press.
- Askim, Jostein, Age Johnsen, and Knut-Andreas Christophersen. 2008. Factors behind organizational learning from benchmarking: Experiences from Norwegian municipal benchmarking networks. *Journal of Public Administration Research and Theory* 18:297–320.
- Barnard, Chester I. 1938. *The Functions of the Executive*. Cambridge, MA: Harvard University Press.
- Bevan, Gwyn, and Christopher Hood. 2006. What's Measured is What Matters: Targets and Faming in the English Public Health Care System. *Public Administration* 84 (3): 517-38.
- Bourdeaux, Carolyn and Grace Chikoto. 2008. Legislative influences on performance management reform. *Public Administration Review* 68(2): 253-65.
- Brunnson, Nils. 1989. *The Organization of Hypocrisy: Talk, Decisions and Actions in Organizations*. Chichester, UK: John Wiley & Sons.
- Carpenter, Daniel P. and George A. Krause. 2012. Reputation and Public Administration. *Public Administration Review* 72(1): 26-32.
- Chubb, John. E and Terry M. Moe. 1990. *Politics, Markets and America's Schools*. Washington. DC: Brookings Institution

- Cook, Scott D.N. and Dvora Yanow. 1993. Culture and Organizational Learning. *Journal of Management Inquiry* 2(4): 373-90.
- de Lancer Julnes, Patria and Marc Holzer. 2001. Promoting the utilization of performance measures in public organizations. *Public Administration Review* 61: 693-708.
- Dull, Matthew. 2009. Results-model reform leadership: Questions of credible commitment. *Journal of Public Administration Research and Theory* 19(2):255–84.
- Dull, Matthew. 2006. Why PART? The Institutional Politics of Presidential Budget Reform. *Journal of Public Administration Research and Theory* 16: 187–215.
- Dubnick, Melvin J. and H. George Frederickson. 2010. Accountable Agents: Federal Performance Measurement and Third-Party Government. *Journal of Public Administration Research and Theory* 20(S1: 143-159).
- Fiol, C. Marlene, Marjorie A. Lyles. 1985. Organizational Learning. *Academy of Management Review* 10(4): 803–13.
- Frederickson, H. George. 1980. *New Public Administration*. University of Alabama Press.
- Frey, Kathrin. 2010. Performance information in legislative revisions in Switzerland. *Governance* 23(4): 667-90.
- Gains, Francesca and Peter John. 2010. *Public Administration Review*. What do Bureaucrats Like Doing? Bureaucratic Preferences in Response to Institutional Reform 70(3): 455-463.
- Gilmour, John B., and David E. Lewis. 2006. Does Performance Budgeting Work? An Examination of the Office of Management and Budget's PART Scores. *Public Administration Review* 66(5): 742–52.
- Heinrich, Carolyn J. 2012. How Credible is the Evidence, and Does It Matter? An Analysis of the Program Assessment Rating Tool. *Public Administration Review* 72(1): 123-134.

- Heinrich, Carolyn H. and Gerald R. Marschke. 2010. Incentives and Their Dynamics in Public Sector Performance Management Systems. *Journal of Policy Analysis and Management* 29(1): 183-208.
- Janis, Irving L. 1982. *Groupthink: A Psychological Study of Foreign Policy Decisions and Fiascoes*. Boston: Houghton Mifflin.
- James, Oliver. 2011. Performance Measures and Democracy: Information Effects on Citizens in Field and Laboratory Experiments. *Journal of Public Administration Research and Theory* 21(3): 399-418.
- Jennings, Edward T. and Jeremy L. Hall. 2011. Evidence-Based Practice and the Use of Information in State Agency Decision-Making. Advance Access *Journal of Public Administration Research and Theory*.
- Lynn, Jr., Laurence E. 2009. Restoring the Rule of Law to Public Administration: What Frank Goodnow Got Right and Leonard White Didn't. *Public Administration Review*. 69(5): 803-813.
- Lynn, Jr., Laurence E., Carolyn Heinrich and Carolyn Hill. 2001. *Improving Governance: A New Logic for Empirical Research*. Washington D.C.: Georgetown University Press.
- McNeil, Linda M., Eileen Coppola, Judy Radigan and Juilan V. Heiling. 2008. Avoidable Losses: High Stakes Accountability and the Dropout Crisis. *Education Policy Analysis Archives*. 16(3):1-48
- Meier, Kenneth J., and John Bohte. 2007. *Politics and the Bureaucracy: Policymaking in the Fourth Branch of Government*. 5th ed. Belmont, CA: Thompson Wadsworth.
- Meier, Kenneth J. and Laurence J O'Toole Jr. 2003. Public management and educational performance: The impact of managerial networking. *Public Administration Review* 63(6): 689-699.
- Meier, Kenneth J. and Laurence J O'Toole Jr. 2010. Organizational Performance: Measurement Theory and an Application Or, Common Source Bias, the Achilles Heel of Public Management Research. Paper presented at the Annual Meeting of the American Political Science Association, September 1-5, 2010, Washington DC.

- Moon, M. Jae and Peter deLeon. 2001. Municipal Reinvention: Managerial Values and Diffusion among Municipalities *Journal of Public Administration Research and Theory* 11(3): 327-352
- Moynihan, Donald P. 2008. *The Dynamics of Performance Management: Constructing Information and Reform*. Washington D.C.: Georgetown University Press.
- Moynihan, Donald P., Sergio Fernandez, Soonhee Kim, Kelly LeRoux, Suzanne J. Piotrowski, Kaifeng Yang, and Bradley E. Wright. 2010. Performance measurement amidst governance complexity. *Journal of Public Administration Research and Theory* 20(S1):
- Moynihan, Donald P., and Patricia W. Ingraham. 2004. Integrative leadership in the public sector: A model of performance information use. *Administration & Society* 36:427–53.
- Moynihan, Donald P. and Stéphane Lavertu. 2012. Does Involvement in Performance Reforms Encourage Performance Information Use? Evaluating GPRA and PART. *Public Administration Review* 72(4): 592-602
- Moynihan, Donald P., and Sanjay K. Pandey. 2010. The Big Question for Performance Management: Why do Managers Use Performance Information? *Journal of Public Administration Research and Theory* 20(4): 849-66.
- Moynihan, Donald P. and Alasdair Roberts. 2010. The Triumph of Loyalty over Competence: The Bush Administration and the Exhaustion of the Politicized Presidency. *Public Administration Review* 70(4): 572-581.
- Nicholson-Crotty, Sean, Nick A. Theobald, and Jill Nicholson-Crotty. 2006. Disparate measures: Public managers and the use of multiple performance measures. *Public Administration Review* 66:101–13.
- Nicholson-Crotty, Sean, and Laurence J O'Toole Jr. 2004. Public management and organizational performance: The case of law enforcement agencies. *Journal of Public Administration Research and Theory* 14(1): 1–18.

- Pitts, David W., Alisa K. Hicklin, Daniel P. Hawes and Erin Melton. 2010. What Drives the Implementation of Diversity Management Programs? Evidence from Public Organizations. *Journal of Public Administration Research and Theory* 20(4): 867-86.
- Pollitt, Christopher. 2011. Performance Blight and the Tyranny of Light: Accountability in Advanced Performance Measurement Regimes. In Melvin J. Dubnick and H. George Frederickson (eds). *Accountable Governance: Promises and Problems*. Armonk, NY: M.E. Sharpe, pp81-97.
- Romzek, Barbara S., and Patricia Wallace Ingraham. 2000. Cross Pressures of Accountability: Initiative, Command, and Failure in the Ron Brown Plane Crash. *Public Administration Review* 60(3): 240–53.
- Reich, Robert B. 1990. *Public Management in a Democratic Society*. Englewood Cliffs, NJ: Prentice Hall.
- Senge, Peter M. 1990. *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Doubleday.
- Soss, Joe, Richard Fording, and Sanford Schram. 2011. The Organization of Discipline: From Performance Management to Perversity and Punishment. *Journal of Public Administration Research and Theory*. 21(s2): i203-232.
- Stoddard, Christiana and Sean P. Corcoran. 2007. The Political Economy of School Choice: Support for Charter Schools across States and School Districts. *Journal of Urban Economics* 62(1): 27-54.
- Van de Walle, Steven, and Wouter Van Dooren (eds). 2008. *Performance Information in the Public Sector: How it is Used*. Houndmills: Palgrave.
- Van de Walle, Steven, and Tony Bovaird. 2007. Making better use of information to drive improvement in local public services: A report for the Audit Commission. Birmingham, AL: School of Public Policy, Univ. of Birmingham.
- Wanous, John P. and Michael J. Hudy. 2001. Single-Item Reliability: A Replication and Extension. *Organizational Research Methods*. 4(4): 361-375.

White, Joseph. 2012. Playing the Wrong PART: The Program Assessment Rating Tool and the Functions of the President's Budget. *Public Administration Review* 72(1): 112-21.

Williams, Paul. 2002. The Competent Boundary Spanner. *Public Administration* 80(1): 103-124.

**Table 1: Descriptive Statistics**

Variable	Mean	Std. Dev.	Min	Max
Performance Information Use (Factor Score)	-0.01	1.02	-2.96	1.40
Personnel Decisions	3.37	0.62	0	4
Strategic Decisions	3.54	0.55	2	4
Daily Management	3.16	0.70	1	4
Advocacy	3.31	0.61	1	4
Allocate Resources	3.39	0.60	2	4
Efficiency	3.31	0.59	1	4
Stakeholder Influence	2.94	0.63	1	4
Reliance on Partnerships	2.73	0.73	1	4
Networking	0.02	0.99	-2.57	3.56
Environmental Complexity	2.55	0.74	1	4
Student Diversity	0.41	0.17	0	0.70
Stakeholder Conflict	3.12	0.50	1	4
Test focus	0.65	0.48	0	1
Learn from Senior Managers	3.24	0.76	1	4
Early Adopter	2.74	0.67	1	4
Shared Culture	3.48	0.57	1	4
Central Administrative Capacity	1.81	1.27	0	9
Total Enrollment (thousands)	4.94	13.62	0.06	199.52
Total Revenue per Student (thousands)	11.35	4.33	5.73	83.85
Student-Teacher Ratio	12.56	2.73	4.80	32.60
Superintendent Experience	9.12	8.94	0	42
Superintendent Education	2.33	0.49	1	3

**Table 2. Distribution of Performance Information Use Survey Items**

<i>To what extent do you use performance data to:</i>	Personnel Decisions	Strategic Decisions	Daily Management	Advocacy	Allocate Resources	Efficiency
Never (1)	0.79	0.00	0.31	0.16	0.00	0.31
Not Frequently (2)	4.71	2.51	16.80	4.55	5.96	5.65
Frequently (3)	50.71	41.07	49.92	53.46	48.59	56.51
Very Frequently (4)	43.80	56.43	32.97	38.46	45.45	37.52

Cells represent percentage of cases within each category

**Table 3. Regression Models for Determinants of Performance Information Use**

	PI Use - Factor Score	Personnel Decisions	Strategic Decisions	Daily Management	Advocacy	Allocate Resources	Efficiency
<i>Environmental Variables</i>							
Stakeholder Influence	0.200** (0.069)	-0.003 (0.040)	0.074† (0.038)	0.156** (0.054)	0.111* (0.047)	0.093* (0.042)	0.083† (0.045)
Reliance on Partnerships	0.145* (0.059)	0.032 (0.034)	0.043 (0.034)	0.100* (0.043)	0.073* (0.037)	0.073* (0.035)	0.077* (0.036)
Managerial Networking	0.174** (0.043)	0.094** (0.026)	0.061* (0.024)	0.096** (0.028)	0.084** (0.027)	0.066** (0.025)	0.083** (0.027)
Environmental Complexity	0.039 (0.061)	0.033 (0.038)	-0.025 (0.035)	0.044 (0.045)	0.014 (0.039)	0.005 (0.040)	0.030 (0.038)
Student Diversity	0.619* (0.253)	0.133 (0.152)	0.368* (0.145)	0.440** (0.168)	0.228 (0.162)	0.318* (0.152)	0.275† (0.154)
Stakeholder Conflict	0.203* (0.086)	0.156** (0.058)	0.080† (0.048)	0.133* (0.061)	0.082 (0.053)	0.075 (0.053)	0.089† (0.049)
<i>Organizational Controls</i>							
Learn from senior managers	0.0499 (0.060)	-0.008 (0.039)	0.009 (0.036)	0.011 (0.045)	0.070† (0.042)	0.030 (0.036)	0.018 (0.040)
Early adopter	0.110† (0.066)	0.114** (0.043)	0.058 (0.036)	0.055 (0.048)	-0.006 (0.045)	0.008 (0.042)	0.088* (0.040)
Shared culture	0.406** (0.081)	0.234** (0.052)	0.193** (0.049)	0.205** (0.057)	0.152** (0.052)	0.208** (0.052)	0.178** (0.050)
Central Administrative Capacity	0.088* (0.036)	0.028 (0.022)	0.018 (0.021)	0.072** (0.026)	0.037 (0.026)	0.037 (0.024)	0.051* (0.024)
Test focus	-0.026 (0.088)	0.017 (0.056)	-0.001 (0.050)	0.041 (0.063)	-0.058 (0.056)	-0.029 (0.055)	0.005 (0.056)
Total Enrollment (1000s)	0.001 (0.003)	-0.004* (0.002)	0.003* (0.001)	0.002 (0.002)	-0.0004 (0.002)	0.002 (0.002)	-0.0001 (0.002)
Total Revenue per Pupil (\$1000s)	-0.002 (0.011)	-0.011† (0.006)	-0.003 (0.005)	-0.007 (0.007)	0.001 (0.005)	-0.001 (0.005)	0.013** (0.004)
Student-Teacher Ratio	0.035† (0.019)	0.011 (0.010)	0.007 (0.010)	0.018 (0.014)	0.016 (0.011)	0.014 (0.011)	0.032** (0.011)
<i>Individual Controls</i>							
Superintendent Experience	-0.012* (0.005)	-0.005* (0.003)	-0.009** (0.003)	-0.005† (0.003)	-0.001 (0.003)	-0.006* (0.003)	-0.006* (0.002)
Superintendent Education	0.043 (0.092)	0.077 (0.056)	-0.023 (0.055)	0.002 (0.066)	0.122* (0.054)	0.008 (0.057)	-0.017 (0.053)
Constant	-3.153** (0.528)	2.361** (0.326)	2.552** (0.306)	1.387** (0.389)	1.647** (0.332)	1.985** (0.326)	1.469** (0.322)

Observations	516	518	519	519	517	519	519
R-squared	0.219	0.133	0.136	0.162	0.138	0.132	0.159

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Robust standard errors used in models 2-7 \*\* p<0.01, \* p<0.05, † p<0.1

## Appendix 1: Variable measurement

Variable name	Data Source	Item (unless otherwise noted, scale is 4=strongly agree; 3=tend to agree; 2=tend to disagree; 1=strongly disagree)
Performance Information Use (dependent variable)	TSS	Superintendents are provided with substantial detail on the performance of students and employees. To what extent do you use this type of performance data to: Make personnel decisions; Make strategic decisions; Make day-to-day management decisions; Advocate for my district to stakeholders; Allocate resources; Learn how to make services more efficient (4=Very Frequently; 3=Frequently; 2=Not Frequently; 1=Never).
Stakeholder Influence	TSS	Our district continually adjusts our internal activities and structures in response to stakeholder initiatives and activities.
Reliance on Partnerships	TSS	My district relies upon partnerships with others in order to accomplish policy goals
Networking	TSS	Factor score of the following survey items: How frequently you interact with individuals in the following groups (6=Daily ; 5= More than once a week; 4=Weekly; 3= Monthly; 2= Yearly; 1= Never): School board members; Teachers' associations; Parent groups, e.g. PTA; Local business leaders; Other superintendents; Federal education officials; State legislators; Texas Education Agency; City/County

		Government; Local Police/ Fire Depts.; Non-profit organizations
Environmental Complexity	TSS	I would characterize my district's environment as relatively complex.
Student Diversity	TEA	Blau dissimilarity index based on racial/ethnic heterogeneity. Higher values indicate more racial/ethnic heterogeneity.
Stakeholder Conflict	TSS	The stakeholders in this school district fulfill in general their agreements with one another (reversed)
Test focus	TSS	1 = Selects either "Compliance with No Child Left Behind" or "Student performance on the TAKS" as "most important problems facing your district"; 0 = selects one of following "Bilingual education; College preparation; Vocational Education; Physical Education; Nutrition Issues; Discipline Issues"
Learn from Senior Managers	TSS	I rely on advice from a senior management team to help make important decisions.
Early adopter	TSS	Our district is among the first to employ new ideas and practices
Shared Culture	TSS	Our district works to build a common identity and culture among district employees.
Central Administrative Capacity	TEA	Percent of district that are reported with a <i>central office</i> ID and rather than a specific <i>school</i> ID. This includes superintendents, presidents, chief executive officers, chief

		administrative officers, business managers, athletic directors, and other administrators.
Total Enrollment	TEA	Total number of students enrolled in district (in thousands)
Total Revenue per Student	TEA	Total revenue from all sources (local, state, federal) in thousands of dollars divided by the total number of enrolled students
Student-Teacher Ratio	TEA	Average class size as calculated by TEA. Average class sizes are calculated by summing all the students served (in a given grade at the campus) and dividing by the sum of the teacher FTE counts for those records.
Superintendent Education	TSS	Highest degree received: 1=Bachelors degree; 2= Masters level; 3 = PhD or doctorate
Superintendent Experience	TSS	Years as superintendent in current district

TSS = 2010 Texas Superintendent Survey

TEA = Texas Education Agency

## **Endnotes**