For the Want of a Nail: The Interaction of Managerial Capacity and Human Resource Management on Organizational Performance

Abstract: Human resource management and managerial capacity are well documented in the public management literature as integral management functions. The field has devoted attention to the importance of human resources, but it has yet to consider whether human resource management interacts with capacity in attaining organizational outcomes. Using a large-N, multiyear data set of public organizations, this article seeks to rectify this gap in the literature. The findings validate scholarly arguments on the importance of public organizations’ need to manage human resources and capacity effectively, identifying just the right combination for performance gains. Empirical results encourage practitioners to consider the ways in which human resource management and capacity work together to influence performance but sometimes undermine each other in counterintuitive ways.

Practitioner Points
- Myriad goals in public organizations afford opportunities for managers to practice multiple combinations of human resource management and capacity strategies.
- When capacity is low, quality human resource management may make up the difference.
- Organizational slack becomes less necessary as the quality of human capital improves.
- Putting skilled people in the wrong places impedes organizational performance.

Of all the relevant managerial functions involved, the management of public organizations’ human capital has been central to the field since its foundation. Today’s frequent references to the U.S. government’s “human capital crisis,” the attention devoted to human resources strategy by the U.S. Comptroller General (e.g., Walker 2001), and the arguments of a number of scholars that human resource management (HRM) is critical all amplify the theme (Bilmes and Neal 2003; Bruel and Gardner 2004; Ingraham, Selden, and Moynihan 2000; Kellough and Nigro 2006). Often in the abstract, the emphasis is that the increased development of human resources will always pay off, but most organizational relationships are subject to conditions that facilitate or dampen the impact. One possibility with regard to the management of human resources is the existing level of managerial capacity.

The great majority of U.S. public employees pursue their careers at the local level, and far away the vast majority of these—more than 6.7 million—work in the field of public education, especially elementary and secondary education (Nigro, Nigro, and Kellough 2006, 4–5, 8). Despite the huge size of this sector and the importance of public management in such settings, there has been surprisingly little research on the contingent effects of managerial activities by scholars specializing in public administration (Raffel 2007). We seek to rectify this gap by examining the impact over a several-year period of the management of human capital as it interacts with managerial capacity to influence the performance of a large sample of public organizations that specialize in public education, while controlling for a range of additional influences—other resources, constraints, and managerial variables—that might also shape outputs and outcomes.

We proceed by placing this investigation in the context of existing literatures on human resource management and managerial capacity. We offer some theoretical background that serves to support our focus on human capital and its management as a key HRM function, and of management capacity generally, and introduce a model that depicts how public management helps shape policy results. We then describe our sample and measures and report results for estimations of the effect of human capital on organizational performance contingent on management capacity. We conclude with a sketch of implications for scholars and practitioners.

Investigating the contingencies of managing human capital or other factors is crucial for several reasons.
Public programs generally operate with scarce resources. As a result, the failure to recognize limits on managerial actions translates into inefficiencies at best. On the other hand, such failure could also lead to wasted public resources. Theoretically, focusing on the contingencies that affect the management of human capital is important because such an analysis moves the study of public management into the mainstream work of organization theory, with its emphasis on how organizational performance is contingent on a variety of factors (Kelman 2008).

### Human Resource Management and Managerial Capacity: A Literature Review

Most interpretations of human resource management stem from the Harvard School, where the term encompasses all management decisions that affect the relationship between organization and employee. HRM is characterized along a wide array of dimensions—focus on production, focus on people, loose versus tight supervision, stress on common goals versus stress on core processes, and so forth (O’Toole and Meier 2009). The development of what has traditionally been called public personnel administration in the United States has evolved as an amalgamation of processes with twenty-first-century practices rooted in the eighteenth century. Human resource management is grounded in external and internal motivations and trends (Starling 2011)—from questions of equal pay to agency discrimination to family medical leave, social and political pressures have permeated the processes of public organizations. The essence of human resources management is the ability to obtain, retain, and develop critical human resources and talent (Donahue, Selden, and Ingraham 2000). The expectation is that when successfully executed, this managerial function should produce quality managers and frontline workers and effective professional development programs.

An extensive literature in human resource management suggests the importance of it for public service performance. Virtually everyone is convinced that HRM matters; however, far from overwhelming systematic evidence (i.e., a lack of efficient or appropriate HRM measures to use across numerous organizations) impedes scholarly progress (Boyne et al. 2006).

While structures and processes have their place, people are integral to public service. Highly qualified and motivated people are correlated with better organizational outcomes. As one of four pillars emphasized in the Government Performance Project, HRM is a means by which to “manage for results”—that is, to stack the deck in favor of one’s organization by recruiting, hiring, retaining, and developing people for success. For these reasons, it seems reasonable to expect managers to place efforts into internal management and pay specific attention to the quality of human capital. What has not been studied is how managing human resources and managing capacity interacts for performance outcomes—how capacity affects the demonstrated connections between HRM and performance.

Little scholarly consensus exists about the concept of capacity; however, recent “black box” theories of public management highlight that capacity is a critical determinant of outcomes in the public sector (see Andrews and Boyne 2010; Andrews and Brewer 2013; Ingraham, Joyce, and Donahue 2003). While capacity can refer to resource availability—time, people, money—with which to operate, public management literature suggests a more active, systematic description. Honadle argues that the “ability to anticipate and influence change, develop programs to implement policy, and attract and absorb resources” (1981, 577) are activities that signify capacity. Lynn, Heinrich, and Hill (2001) build on this logic and discuss capacity as encompassing behaviors such as information gathering, planning, and system integration. Scholars have also contended that capacity is conceptually akin to organizational slack (Bourgeois 1981), likened to potential rather than kinetic energy, a flexible part of the organization that can be mobilized to deal with problems (see Dalton et al. 1980; O’Toole and Meier 2010a).

High-capacity organizations reflect “strong policy, program, and resource management” allowing them to be “adaptable, effective, and efficient” (Andrews and Boyne 2010; Burgess 1975, 711). On the other hand, low-capacity ones experience difficulty as they “develop and implement innovations” and find it challenging to self-improve (Andrews and Boyne 2010). As a necessary antecedent to effectiveness, capacity shapes and supports longer-term performance capabilities (Ingraham and Donahue 2000). Put simpler, capacity is at least two dimensional: one dimension captures resources at managerial disposal, while the second includes skillful, managerial know-how to integrate systems to organizational advantage (see Honadle 1981).

On the theoretical support for the concept, Sorenson’s (2003) assessment of the computer workstation industry suggests that vertical integration is key to having the capacity to deal with a turbulent environment. Vertical integration, according to Sorenson, is enhanced by a strong central management team that can take results from various subunits and determine what lessons the organization might learn (see Donahue, Selden, and Ingraham 2000). To be effective, contemporary public managers must be adaptable and able to function in rapidly changing circumstances while ensuring a level of service satisfaction for the public—capacity allows for such an approach. The aim of this article is to examine whether HRM has a positive impact on public service performance and whether capacity enhances this impact.

### Modeling the Impacts of HRM and Capacity

Managerial capacity and human resource management are distinct but related concepts. Capacity or slack is built into organizations in myriad ways; one of the most common is through human capital. To build effective slack, managers must decide to grow employees, support worker development, and help employees reach individual potential. In short, performance outcomes are the result of HR practices and capacity. Managers strategically conduct HR practices to maintain their crucial human element, but also in hope that the effects of HRM will manifest for their organizations in meaningful ways.

The Workplace Forecast report, published by the Society for Human Resource Management (SHRM), notes the increasing importance...
of workers with information technology skills, specifically those who are comfortable using social networking sites and/or telecommuting on a regular basis. To build capacity in this regard, effective HR managers would seek out employees with experience in e-learning and flexible work arrangements. In this case, HR practices focus on hiring people who already possess the particularized capacity the organization needs and build capacity from the outside. The example might be extended to building capacity within the existing workforce. Major demographic shifts in the age of public service workers have created huge gaps between the skill sets of baby boomers and contemporary public service professionals (SHRM 2013). Effective HRM recognizes this disconnect and invests resources in building slack with current employees. This example illustrates that daily operations include the management of human resources and capacity—processes that overlap in critical ways. Following the logic of Donahue, Selden, and Ingraham (2000), our theoretical argument is best summarized as follows: when public organizations are able to strategize processes and match people to the right positions, their ability to achieve performance goals increases.

To examine how the impact of developing human resources might be affected by managerial capacity, we model public organizational performance as a function of human resources, capacity, other managerial functions or contributions that have been shown to influence results, and a set of controls that relevant research indicates should be included.

We begin with several aspects of public management. Substantial earlier research by Meier and O’Toole (2001, 2003) shows positive contributions to organizational outcomes from managerial networking in the environment of public organizations while interactions between political principals and top managers were negatively related to results (see also Melton, Walker, and Walker 2010). Meier and O’Toole (2002) also show that quality managers positively influence performance, as does retaining experienced employees (and thereby maintaining stability in human resources). Our opening argument generates the expectation that management capacity and the management of human capital should also contribute to performance outcomes. These several aspects of management and their expected relationships, therefore, yield the following:

\[
O_t = \beta_3 M_{u_t} + \beta_4 M_{c_t} + \beta_5 M_{h_t} + \beta_6 M_{e_t} + \beta_7 M_{w_t} + \beta_8 X_t + \epsilon_t, \tag{1}
\]

where \(O_t\) is some measure of organizational outcome at time \(t\); \(M_{u_t}\) represents external networking efforts by managers; \(M_{c_t}\) is a measure of managerial interactions upward with political principals; \(M_{h_t}\) is a measure of managerial quality; \(M_{e_t}\) is personnel stability; \(M_{w_t}\) represents management capacity; \(M_{h_t}\) represents human resources as developed; \(\epsilon_t\) is an error term; and \(\beta_3\) through \(\beta_8\) are estimable parameters.

These management elements reflect the literature-documented realities of management as a multifaceted challenge and as a frequently multitactor phenomenon. A given manager may distribute efforts across multiple functions, and some or all of the functions may be handled by multiple managers. Unlike networking or other managerial actions, management capacity is not managerial action per se but rather the potential and capability to take action.

Unlike networking or other managerial actions, management capacity is not managerial action per se but rather the potential and capability to take action.

Equation (1) is insufficient for two reasons. First, it lacks consideration of environmental forces that must be taken into account in explaining organizational outcomes. Public organizations must contend with numerous resources and constraints, some of which are predictable while others are unpredictable, yet all are critical for performance. We add a vector of external factors, represented by \(X_t\), to designate a set of such forces as they operate at time \(t\), which yields the following:

\[
O_t = \beta_3 M_{u_t} + \beta_4 M_{c_t} + \beta_5 M_{h_t} + \beta_6 M_{e_t} + \beta_7 M_{w_t} + \beta_8 X_t + \epsilon_t, \tag{2}
\]

Second, our argument is not that managerial capacity or human resources development adds in a linear manner to the performance of an organization. Rather, we are interested in whether managerial capacity can provide infrastructure for managers—that is, the resources that make human resources even more successful (over and above what effective HRM practices can do alone). We hypothesize that the effects of HRM on performance will vary as capacity changes, and we further contend that this relationship will hold different values in different contexts (see Meier, O’Toole, and Hicklin 2010; O’Toole and Meier 2009, 2010b). The question, therefore, requires estimating the specification in equation (3) that includes an interaction between human resources (\(M_h\)) and managerial capacity (\(M_c\)) as indicated by the new multiplicative term in the model:

\[
O_t = \beta_3 M_{u_t} + \beta_4 M_{c_t} + \beta_5 M_{h_t} + \beta_6 M_{e_t} + \beta_7 M_{w_t} + \beta_8 X_t + \beta_9 M_{c_t} M_{h_t} + \epsilon_t, \tag{3}
\]

If the inclusion of this new term allows us to explain a greater amount of the variance in performance outcomes than equations (1) and (2), then we can conclude that human resource management interacts with managerial capacity. More precisely, should the slope coefficient for the interaction (\(\beta_9\)) be positive, we can recommend managers practice a two-pronged internal management approach that involves not only effective HR programs but also the deliberate building of human capacity while integrating HRM.

Data and Measurement

All management studies need to be set in a context that permits comparisons across investigations (O’Toole and Meier 2010b). A well-developed data set for current purposes is drawn from the Texas public school system. Used by numerous public management scholars (Fernandez 2005; Goerdel 2006; Gonzalez-Juenke 2005; Hicklin 2004; Hill 2005; Johansen 2007; Meier and Gill 2000; Melton 2015; Pitts 2005), these data constitute a rich empirical resource replete with validated managerial concepts and controls. This analysis relies on six years of performance data (2000–2005) and supplementary data from two waves of an original management survey of top-level administrators (superintendents). The survey had an average 67 percent response rate and, when combined with
archival data, produces 3,041 total cases for analysis. Missing data on some performance indicators reduce the total number of cases to as low as 2,776.

A pooled time-series analysis such as this one needs to be concerned with violations in the assumptions of multiple regression, particularly serial correlation and heteroscedasticity. Assessments of the equations showed serial correlation, so a set of dummy variables for individual years was included in the analysis as an adjustment. Pooled diagnostics for heteroscedasticity showed only modest evidence of heteroscedasticity; estimation with robust standard errors generated results similar to those presented here.

The school districts included in this study range widely on a variety of dimensions, including student composition (race, ethnicity, socioeconomic status), resources (instructional expenditures per pupil, teachers with advanced degrees), setting (urban, rural, suburban), and performance (graduation rates, college readiness). The districts in the sample are not statistically different on these dimensions from those managed by nonresponsive superintendents. Although public schools are the most common public organization in terms of employment in the United States, they differ somewhat on characteristics likely to affect management and performance. School districts are highly decentralized with a great deal of discretion vested in the street level (the classroom). The organizations are professionalized with required certification processes for most of the line employees and managers. School districts also operate in a highly salient environment with strong clientele and political pressures. Although we do not claim that school districts are representative of all public organizations, a large percentage of public organizations are characterized by decentralization, professionalization, and highly contentious environments. Within this context, we are concerned with managerial capacity, human resource management, and their effects on performance. Each of these variables is discussed sequentially in the following sections.

Although public schools are the most common public organization in terms of employment in the United States, they differ somewhat on characteristics likely to affect management and performance.

Central office expertise is clearly distinguishable from other forms of human capital in a school district. These are not individuals who teach, and thus their impact is less likely to help in the top-end performance of the very best students. Specialized teachers such as honors calculus instructors are key in that instance. The impact of central office staff is most likely to be felt in more routine student performance (e.g., basic skills tests), where central administration designs the appropriate curriculum, as well as in attendance and dropout programs, where administrative specialization is likely to be useful. Texas school districts are relatively lean in terms of central office administration; the mean percentage of central office administrators for all districts in the study is only 1.85 percent with a standard deviation of 1.45. Seventy-five percent of districts in this sample operate with central office staffs equal to 2 percent or less of total district employees. The size of the capacity contingent determines whether the central office can perform essential activities (e.g., help principals find teachers that meet school needs) or offer only perfunctory administrative support (e.g., processing of paperwork during the hiring process).

**M: The Management Variables**

**Management capacity (M<sub>c</sub>).** Management capacity is operationalized as the percentage of employees who are located in central office administration. This measure of managerial capacity can be linked to the types of actions needed in public education systems. Why might central office staffing be considered a good measure of managerial capacity? As the location of the research and policy analysis units, the central office is composed of individuals who evaluate performance. The central office is also the locus for curriculum planning and design as well as the central budget apparatus. These units are essential in determining which interactions to engage; they can assess the potential value of organizational action and, unlike school-level administrators, have a broader perspective of the entire education system. Because few programs are self-implementing, central office staff is also needed to design human resources programs and integrate them into existing policies, procedures, and curricula.

**Human resource management (M<sub>H</sub>).** Our assumption is that internal management will result in the development of the human resources of the organization, which aligns closely with Barney’s (1995) argument that effective HR practices provide organizations with competitive advantage. Although HRM entails much more than can be examined in a single study, including the nature and quality of strategic planning for human resources needs, we place emphasis on its primary output: the talent of people and the quality of professional development made available to them.
To test this claim, we employ five survey items to capture the quality of HRM—a measurement scheme supported by the notion that complementary “bundles” of human resources practices enhance superior organizational performance (Gould-Williams 2003; Marchington and Grugulis 2000). Superintendents were asked to rate the quality of principals’ management skills, the quality of experienced teachers, and the quality of professional development available on a five-point scale from excellent (5) to inadequate (1). Principals are the key line managers of the organization and generally are the chief operating officers of individual schools. Teachers, of course, are the primary production personnel of any school system. Superintendents were also asked to agree or disagree with two statements: “With the people I have in this organization, we can make virtually any program work” and “I am quite likely to recommend a subordinate for a superintendent position in another district” on a four-point scale from strongly agree to strongly disagree. The first question taps into scholarly consensus in the field of education policy that schools are effective simply because of the people who work there rather than particular programmatic developments and implementations (Meier et al. 2006). The second assesses whether the superintendent is actively cultivating the skills of mid-level managers.

We conduct a factor analysis to extract the common core concept of human capital from these multiple indicators, as shown in table 1. The five items all load positively on the first factor, accounting for 42 percent of the total variance. No other factor meets the standard criterion of significance by producing an eigenvalue of 1.0 or greater. The factor loadings show strong correlations between the indicators and the overall factor, except for the willingness to recommend an employee as a superintendent elsewhere.

This measure is somewhat constrained given its primary components emphasize the quality of human capital, rather than its management. We do not have much information about exactly how superintendents and other top-level managers implement human resources management strategies and programs to build human capital. Our included notion of professional development, however, does directly focus on managerial responsibility. Its strong factor loading suggests that it accurately reflects some aspects of human capital and its management.

Although this study is primarily concerned with the interaction of HRM and managerial capacity, several other managerial variables are included in the analysis to ensure results are not a function of other key aspects of management. These variables include managerial networking, managerial quality, managing upward (interacting with political principals), managerial stability, and personnel stability. These last two variables represent different aspects of the personnel function.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Measuring the Quality of Human Capital: Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Loading</td>
</tr>
<tr>
<td>Quality of experienced teachers</td>
<td>.74</td>
</tr>
<tr>
<td>Quality of professional development</td>
<td>.65</td>
</tr>
<tr>
<td>Quality of principals’ management skills</td>
<td>.75</td>
</tr>
<tr>
<td>Our people can make any program work</td>
<td>.67</td>
</tr>
<tr>
<td>Recommend subordinate as superintendent</td>
<td>.39</td>
</tr>
<tr>
<td><strong>Eigenvalue</strong></td>
<td><strong>2.12</strong></td>
</tr>
</tbody>
</table>

**Managerial networking (Mn).** This variable seeks to measure the reported behavior of school district top managers as they interact with important members of the district environment. Because school districts operate within a network of other actors and organizations who influence their students, resources, programs, goals, and reputation, the extent to which a superintendent manages in the school district’s interdependent environment is related to school district performance (Meier and O’Toole 2001, 2003; O’Toole and Meier 2009).

In their study of the behavioral networking of superintendents and its effect on performance, Meier and O’Toole (2001) selected four sets of actors from the district environment: local business leaders, other school superintendents, state legislators, and the Texas Education Agency. The data were collected from a mail survey in which each superintendent was asked how often he or she interacted with each actor on a six-point scale ranging from daily to never. The assumption was clear: superintendents with a managerial focus on networking should interact more frequently with the environment than would a superintendent practicing an internal management approach. A combined networking style scale was created using factor analysis, where each of the four items loaded positively on the first factor, producing an eigenvalue of 1.82. Resulting factor scores from this analysis were used as a measure of managerial networking, with higher scores denoting a greater networking orientation.

**Managerial quality (Mq).** Managerial quality is noted in the literature as a particularly hard concept to measure. The confusion ranges from arguments over what characteristics exactly are captured by a quality indicator to the standardizing of the measure to provide accurate depictions across units (see Beam 2001; Murphy and Cleveland 1995). Texas schools operate as a competitive labor market, with salary setting taking place given full information. Therefore, we should expect skills to be adequately rewarded by the market. Meier and O’Toole (2002) validate a measure based on residuals from predictive salary models of district superintendents. They predict logged superintendent salaries with 11 variables measuring job size, human capital factors, personal characteristics, and prior school district outputs similar to common salary models in the literature (see Ehrenberg, Chaykowski, and Ehrenberg 1988). We replicated that analysis and created a measure for 2000–2005.

Compared with other models in the literature, our model performs favorably (predicting about 80 percent of the variance in superintendent salaries). Our goal was to purge as many factors unrelated to quality from the model as possible. After standardizing the residuals ($\mu = 0, \sigma = 1$), we employed them as a rough indicator of quality. Because the residual contains all factors not included in the model, the measure is admittedly messy. The observable impact of this measurement error, however, will weaken any relationships between a quality measure and other variables such as organizational outcomes (Carmine and Zeller 1979).

**Managing upward.** In addition to managing the environment and internal operations of the organization, public managers also have to deal with political sovereigns. This idea of managing up the hierarchical chain of command follows Moore’s (1995)
conceptualization of interactions with superiors. We identify the school board as an oversight body with which superintendents must often deal. Previous research supports that superintendent interactions with the school board are fundamentally different from those with other environmental actors (Melton, Walker, and Walker 2010; O’Toole, Meier, and Nicholson-Crotty 2005). Superintendents were asked to rate their frequency of interaction with the school board—the employed measure is along a six-point scale ranging from daily to never.

**Personnel stability.** O’Toole and Meier (2003) developed and validated two aspects of personnel stability. They note in their study that these measures are as much managerially driven as they are separate influences, so we interpret both as aspects of management (M). **Managerial stability** seeks to measure consistency in top leadership; it is simply the number of years the superintendent has been employed by the district in any capacity.² **Workforce stability** moves this concept down to the street or classroom level. It is measured as the percentage of teachers employed by the district during the preceding year who continue to work for the district in the current year. For both measures, higher scores indicate greater stability. Data on managerial stability were obtained from the superintendent survey responses while teacher stability data were acquired from the Texas Education Agency. We consider these measures to reflect aspects of personnel management. While such stability does not fall completely under the purview of school district leadership, these variables are influenced by key decision makers.

**O: Outcome Measures**

All programs have multiple goals and thus are subject to multiple performance indicators, yet some objectives are deemed more salient by the political environment than are others (O’Toole and Meier 2004). This study incorporates three different performance indicators in an effort to determine how public management affects a variety of organizational outcomes. The performance measures selected illustrate a range of functions school districts perform.

Although each performance indicator is important to some segment of the educational environment, the most salient by far is the overall student pass rate on the Texas standardized exam. The TAAS (Texas Assessment of Academic Skills), replaced by the TAKS (Texas Assessment of Knowledge and Skills) in 2003, is a standardized, criterion-based test that all students in grades 3–8 and 11 have to take. The grade 11 exam is a high-stakes test, and students are required to pass it to receive a regular diploma from the state of Texas. Scores are used to rank districts, and the examination results are without question the most visible indicator of performance used to assess the quality of schools. Our measure is the percentage of students in a district who passed all (reading, writing, and math) sections of the TAAS/TAKS. It has a mean of 75.6 percent and a standard deviation of 13.5.

Many parents and policy makers are also concerned with the performance of school districts regarding college-bound students. The most complete measure of college-bound student performance is the percentage of students who score above 1110 on the SAT (or its ACT equivalent).³ This measure not only focuses on students likely to go to college, but it also reflects those students who are likely to attend competitive institutions of higher education. This elite emphasis is in direct contrast to the TAAS/ TAKS, which focuses on all students and minimum standards. The college readiness measure is the one least likely to be affected by managerial capacity, since most central office administrators are assigned to dealing with problem students rather than those students who are doing well. The measure has a mean of 20.7 percent (σ = 12.1).

The final measure of performance might be termed a bottom-end indicator: attendance rates. Attendance rates are important for a few reasons. Students cannot learn if they are not in class, and state aid is allocated to the school district based on average daily attendance. Thus, attendance is a suitable low-end indicator of performance—it is measured simply as the average percentage of students who are not absent. Attendance rates are likely to be the most directly affected by managerial capacity, since central office staff generally have the responsibility for truancy programs and administer special programs to keep at-risk students in school. The mean is 96 percent with a standard deviation of 0.9.

**Control Variables**

Public organizations operate in extremely volatile environments, making it increasingly difficult for schools and school districts to educate students. Schools face challenges on a variety of factors such as the racial and class makeup of student populations as well as the available pool of qualified teachers. The corresponding logic for such controls follows that districts with less diverse student populations that are upper-middle class are likely to fare well because of stability at home and higher levels of parental involvement. Students like these are quite likely to do well in school regardless of what the school does (see Burtless 1996). On the other hand, districts with a large number of poor students and a highly diverse student body will find it more difficult to attain high levels of performance because the schools will have to compensate for a lack of support at home as well as deal with more complex and varied learning problems (Jencks and Phillips 1998). The three measures of task difficulty included as controls are the percentages of students who are black, Latino, and poor. Poor students are measured by the percentage who are eligible for free or reduced-price school lunch. All three measures should be negatively related to performance.

Constraints present an unavoidable problem for schools; however, the amount of resources a district has might alleviate some of these issues. Despite a controversial debate about the role of resources in school performance (see Hanushek 1996; Hedges and Greenwald 1996), a growing literature confirms that, like other organizations, schools with more resources generally perform better (Finn and Achilles 1999; Nye, Hedges, and Konstantopoulus 1999; Wenglinsky 1997). Five measures of resources are included as control variables. Average teacher salary, per student instructional spending, and class size are directly tied to financial resources. The average years of teaching experience and the percentage of teachers who are not certified are related to the human capital of the school.
Discussion: The Implications of HRM and Capacity for Performance

As noted earlier, the statewide standardized test, the TAAS/TAKS, is considered the education system’s primary indicator and is used to evaluate the performance of both superintendents and school districts in Texas. Table 2 displays two regressions for this dependent variable. On the left side is the regression without the interaction term, and on the right the interaction between management capacity and HRM is included. Because our interest is in the interaction of these two mechanisms, we will not discuss the other management or control variables. We should note that in table 2, all other management variables are significant in the predicted direction, as are all the control variables with the exception of teacher experience.

Because of the multiplicative nature of the interaction included here (and the potential inflation of t-scores; see Brambor, Clark, and Golder 2006), we rearrange the equation to calculate slopes to appropriately illustrate contingent relationships. Our process shows the impact of HRM across levels of capacity. We further recalculate the standard errors to determine the statistical significance across values. Although the interaction of managerial capacity and human resource management does not quite attain traditional levels of statistical significance (t = 1.96; α = .05), its positive relationship, along with the strong positive relationships for the variables separately, indicates that the two concepts reinforce each other to contribute more than the sum of the parts. To obtain the slope for human resource management, we employ the following equation:

\[
\text{Slope} = \beta(M_h) + \beta(M_h \times M_c) * M_c
\]

Using this formula, we generate a slope estimate for organizations with low levels of capacity (one standard deviation below the mean), average capacity, and high levels of capacity (one standard deviation above the mean). Representative values for capacity, as opposed to the zero-order coefficient, as shown in table 2, align with the reality that all school districts have at least some central office administration. Estimating the zero-order impact will force us to draw conclusions beyond the range of these data and make generalizations to similarly situated bureaucracies difficult. The slope equation with appropriate values for human resource management obtained from the second column of table 2 is as follows:

\[
\text{Slope} = 1.411 + .204 * M_c
\]

It produces the following results:

<table>
<thead>
<tr>
<th>Human Resources Slope</th>
<th>Low capacity</th>
<th>Average capacity</th>
<th>High capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.223</td>
<td>1.518</td>
<td>1.814</td>
<td></td>
</tr>
</tbody>
</table>

As districts move from low to high capacity, the impact of HRM changes by approximately 48 percent. Put another way, when the percentage of employees in central office administration increases, the effect of HRM also increases—denoting a positive, reinforcing relationship between the two managerial activities. The potential for an increased effect of HRM on student performance is conditional on the capacity available to the district. This finding is intuitive given that greater and higher-quality capacity often translates into increased human capital at managerial and organizational disposal (or greater slack)—that is, more individuals with expertise to whom tasks might be delegated (thereby freeing up top-level managers for more complex district problems). In simpler terms, the relationship between HRM and student achievement, contingent on capacity, is likely to produce tangible outcomes such as additional time and resources for superintendents to manage effectively. The range of these effects is illustrated in figure 1.

To obtain the impacts of capacity on performance contingent on the level of human resource management, we use the following slope equation and generate similar estimates:

\[
\text{Slope} = .3701(M_h) + .2039(M_h)c * M_c
\]

| Capacity Slope | Low human resources | .211 |

Table 2: How the Interaction of Human Resources Management and Managerial Capacity Affects Organizational Performance: State-Mandated Testing

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Slope</th>
<th>t</th>
<th>Slope</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human resources management (M_h)</td>
<td>1.481 (.164)***</td>
<td>9.04</td>
<td>1.141 (.100)***</td>
<td>4.29</td>
</tr>
<tr>
<td>Management capacity (M_c)</td>
<td>.412 (.103)***</td>
<td>4.01</td>
<td>.370 (.106)***</td>
<td>3.48</td>
</tr>
<tr>
<td>HRM * Capacity</td>
<td>.204 (126)</td>
<td>1.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School board contact</td>
<td>-.590 (.153)***</td>
<td>3.85</td>
<td>-.606 (.154)***</td>
<td>3.94</td>
</tr>
<tr>
<td>Management quality</td>
<td>.533 (.136)***</td>
<td>3.91</td>
<td>.544 (.136)***</td>
<td>3.99</td>
</tr>
<tr>
<td>Management experience</td>
<td>.043 (.014)***</td>
<td>3.10</td>
<td>.042 (.014)***</td>
<td>3.06</td>
</tr>
<tr>
<td>Personnel stability</td>
<td>.126 (.018)***</td>
<td>7.00</td>
<td>.123 (.018)***</td>
<td>6.82</td>
</tr>
<tr>
<td>Managerial networking</td>
<td>.539 (.137)***</td>
<td>3.92</td>
<td>.545 (.137)***</td>
<td>3.97</td>
</tr>
</tbody>
</table>

Control variables

Teachers’ salaries (000s) | .484 (.681)*** | 7.10 | .496 (.069)*** | 7.24 |
| Class size | -.293 (.101)*** | 2.90 | -.318 (.102)*** | 3.11 |
| Teacher experience | .160 (.069)** | 2.32 | .160 (.069)** | 2.33 |
| Noncertified teachers | -.097 (.024)*** | 3.94 | -.102 (.025)*** | 4.12 |
| Instructional funds (000s) | -.577 (.224)*** | 2.57 | .656 (.229)*** | 2.86 |
| Percentage black students | -.191 (.014)*** | 13.98 | -.194 (.014)*** | 14.07 |
| Percentage Latino students | -.071 (.008)*** | 8.56 | -.072 (.008)*** | 8.67 |
| Low-income students | -.187 (.011)*** | 16.41 | -.185 (.012)*** | 16.09 |

R^2 | .73 | .73 |
| Standard error | 6.83 | 6.83 |
| F | 408.54 | 389.42 |
| N of cases | 3,041 | 3,041 |

Dummy variables for individual years not reported.
*p < .10; **p < .05; ***p < .01 (two-tailed tests of significance).

124 Public Administration Review • January/February 2017
In this case, the conditional impact is dramatically better—the association between managerial capacity and performance increases by 151 percent as schools move from low-quality human resource management to high-quality human resource management. Given the constituent parts of this measure, performance is associated with higher-quality administrators, teachers, and professional development programs. Figure 2 reinforces our findings and depicts the marginal effects of capacity on performance contingent on human resources.4

Note that at one standard deviation below the mean, the marginal impact of management capacity falls beneath acceptable standards for statistical significance. The practical implications of this finding suggest that quality internal management of human capital is necessary for capacity to affect performance in meaningful ways. Figure 2 demonstrates that when quality HRM is lacking, capacity is not correlated with performance gains—reinforcing our contention that managers possessive of human capital must retain employees and strategically develop them with quality HR to enjoy performance gains. Quality HRM is a positive and significant correlate of student performance; however, the contingent effects of capacity depend on the existence of HRM processes.

Table 3 presents the analysis of attendance rates and reveals very different contingent relationships. Both human resources and managerial capacity have positive zero-order impacts on attendance rates (although in the base model, the relationship for human resources does not attain statistical significance), but in concert they appear to undercut each other. Beginning with the assessment of capacity in Figure 3, we observe that as the quality of human resource management improves, the marginal impact of central office bureaucracy on attendance declines:

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Slope (t)</th>
<th>Slope (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human resources</td>
<td>.028 (.17)</td>
<td>1.59</td>
</tr>
<tr>
<td>Management capacity</td>
<td>.072 (.11)**</td>
<td>6.06</td>
</tr>
<tr>
<td>HRM * Capacity</td>
<td>–.044 (.13)**</td>
<td>3.28</td>
</tr>
<tr>
<td>School board contact</td>
<td>–.078 (.16)**</td>
<td>4.78</td>
</tr>
<tr>
<td>Management quality</td>
<td>.062 (.14)**</td>
<td>4.27</td>
</tr>
<tr>
<td>Management experience</td>
<td>–.009 (.01)</td>
<td>0.61</td>
</tr>
<tr>
<td>Personnel stability</td>
<td>.012 (.002)**</td>
<td>6.40</td>
</tr>
<tr>
<td>Managerial networking</td>
<td>.039 (.015)**</td>
<td>2.70</td>
</tr>
</tbody>
</table>

control variables

| Teachers’ salaries (000s) | –.006 (.722) | 0.83      | –.009 (.007) | 1.19 |
| Class size               | –.098 (.011)** | 9.11      | –.092 (.011)** | 8.51 |
| Teacher experience       | .002 (.007) | 0.29      | .002 (.007) | 0.28 |
| Noncertified teachers    | –.009 (.003)** | 3.44      | –.008 (.003)** | 3.01 |
| Instructional funds (000s) | –.245 (.238) | 1.03      | –.001 (.000) | 0.31 |
| Percentage black students| –.291 (.145)** | 2.01      | –.002 (.001) | 1.50 |
| Percentage Latino students | .001 (.009) | 1.59      | .002 (.001) | 1.88 |
| Low-income students      | –.011 (.001)** | 9.13      | –.012 (.001)** | 9.48 |

R2 = 22  22
Standard error = 0.72  0.72
F = 42.05  40.69
N = 3,042  3,041

Dummy variables for individual years not reported.
*p < .10; **p < .05; ***p < .01 (two-tailed tests of significance).

Figure 1 Marginal Effect on Human Resources Management on Overall Pass Rates as Managerial Capacity Changes
Dependent Variable: Overall TAAS Performance

Figure 2 Marginal Effect of Managerial Capacity on Overall Pass Rates as Human Resources Management Changes
Dependent Variable: Overall TAAS Performance

Average human resources .370
High human resources .529
The management of human resources appears to affect attendance only at low levels of managerial capacity (see Figure 4).

Theoretically, this contingent relationship makes sense in terms of the factors that can affect student attendance. Human resource management quality is likely to affect attendance by motivating students, but there are likely limits to this because students who can be motivated by quality teaching and administration are most often students who already have high attendance rates. Managerial capacity, in turn, has the most direct effect on student attendance through the operation of truancy programs.

Districts with low amounts of central office bureaucracy are directly related to school resources—that is, larger central office bureaucracies are attributable to available funds with which to support such positions. Lean central office staffs wear a number of hats that span the gamut from bookkeeping to crisis preparedness. The ability to share or delegate responsibility for student attendance is logical because teachers and principals are in closer proximity to and more familiar with student attendance patterns.

The bivariate relationship between managerial capacity and human resource management reflects complexity at best. At low levels of each, \( M_c \) and \( M_h \) are positively correlated. High levels of capacity and HRM interact differently with negative correlations suggesting a trade-off between managerial strategies once organizations attain acceptable levels. In practical terms, trade-offs might result in decisions concerning where to hire the next person—either to enhance central office bureaucracy, the quality of teaching, or line management.

The final output indicator is the percentage of students who score high on college board exams (see Table 4). High exam scores are generally associated with quality teaching resources rather than managerial resources so the results of the first regression in Table 4 are to be expected. Because the two variables of interest work in opposite directions, investigating their interaction provides some additional views of how the two strategies balance within an organization. For human resource management, the impact on college bound performance only appears to exist for low levels of managerial capacity:

![Figure 3 Marginal Effect of Managerial Capacity on Attendance as Human Resources Management Changes](image)

**Dependent Variable: Attendance**

### Marginal Slopes for Human Resources
- Low capacity: 0.083
- Average capacity: 0.020
- High capacity: -0.044

![Figure 4 Marginal Effect of Human Resources Management on Attendance as Managerial Capacity Changes](image)

**Dependent Variable: Attendance**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Slope</th>
<th>t</th>
<th>Slope</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human resources</td>
<td>0.550 (.241)**</td>
<td>2.29</td>
<td>1.247 (.481)**</td>
<td>2.59</td>
</tr>
<tr>
<td>Management capacity</td>
<td>-0.823 (.236)**</td>
<td>3.49</td>
<td>-0.824 (.236)**</td>
<td>3.49</td>
</tr>
<tr>
<td>HRM * Capacity</td>
<td>-0.461 (.276)*</td>
<td>1.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School board contact</td>
<td>-0.110 (.227)</td>
<td>0.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management quality</td>
<td>0.650 (.205)**</td>
<td>3.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management experience</td>
<td>0.014 (.020)</td>
<td>0.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel stability</td>
<td>0.044 (.030)</td>
<td>1.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managerial networking</td>
<td>0.669 (.203)**</td>
<td>3.20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Control variables**
- Teachers’ salaries (000s): 0.309 (.116)** 2.67 0.309 (.116)** 2.68
- Class size: 0.182 (.180) 1.02
- Teacher experience: 0.428 (.110)** 3.88
- Noncertified teachers: -0.083 (.040)** 2.07
- Instructional funds (000s): 0.003 (.042) 0.07
- Percentage black students: 0.021 (.021) 1.00
- Percentage Latino students: 0.016 (.013) 1.18
- Low-income students: -3.232 (.019)** 17.25
- R²: .31
- Standard error: 9.65
- F: 61.23
- N of cases: 2,777

**Table 4 How the Interaction of Human Resources Management and Management Capacity Affects Organizational Performance: College-Ready Students**

Dummy variables for individual years not reported.

*p < .10; **p < .05; ***p < .01 (two-tailed tests of significance).
Figure 5 Marginal Effect of Human Resources Management on College Readiness as Managerial Capacity Changes
Dependent Variable: SAT 1110+

<table>
<thead>
<tr>
<th>Slopes for Human Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low capacity</td>
</tr>
<tr>
<td>Average capacity</td>
</tr>
<tr>
<td>High capacity</td>
</tr>
</tbody>
</table>

In other words, the quality of HRM positively affects performance on college board exams until managerial capacity grows. Once central office administration reaches a critical point (1.43 percent of total district employees), HRM becomes insignificant (see Figure 5). This finding alludes to the reality that involvement of central office staff in nonroutine student performance has the potential to thwart classroom progress. Central office administration has a clear, defined responsibility, often focusing on routine student matters where administrative specialization is helpful. However, teachers play an undeniable role in preparing students to succeed beyond the district, and more specifically, in preparing them for college.

These results also speak to the key managerial responsibility of superintendents to establish clear boundaries for members of the district as they collectively work toward multiple goals—managers have to place quality people in appropriate positions. Inappropriate allocation of specialization impedes organizational performance, as is evident below and in Figure 6, where management capacity becomes even more negative as levels of human resource management increase:

<table>
<thead>
<tr>
<th>Slopes for Management Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low human resources</td>
</tr>
<tr>
<td>Average human resources</td>
</tr>
<tr>
<td>High human resources</td>
</tr>
</tbody>
</table>

The marginal effect of slack on performance is negative across values of HRM. We attribute these effects to the reality that slack is less necessary as the quality of people in organizations improves. As the talent and skill of human capital grows, the necessity for potential energy should diminish. Consider a superintendent that knows he or she works with a team of capable people able to handle organizational happenings as they arise. He or she is less concerned with the building of capacity and more equipped to solve problems with the people currently in the organization. Another way to conceptualize this phenomenon is to conclude that slack is only needed (and utilized) when existing human resources are unable to perform at required levels in order to get the job done.

In sum, the contingent effects of human resource management and managerial capacity urge practitioners to consider the processes in tandem for two reasons. One is that the variation in some performance indicators is best explained by HRM and capacity. The other reason is that changing HRM strategy has the potential to undercut the effects of capacity and vice versa. Practitioners should note that improving human capital results in additional resources and time because tasks can be delegated to skilled individuals.

Practitioners should note that improving human capital results in additional resources and time because tasks can be delegated to skilled individuals.

Investing in people becomes even more important when the central office is lean as decentralized quality makes up for centralized quantity. Our results support the appropriate task alignment of organizational members, as incongruous allocation of specialization reduces performance. Putting skilled people in the wrong places is counterproductive.

Because organizations have myriad goals, public managers are likely to practice multiple strategies at once, finding the correct mix of activities based upon the goal in question. We cannot provide a prescription for the specific “amounts” of HRM or capacity needed and at what times to increase performance; however, public managers should be aware of organizational threshold points, especially during critical decisions such as hiring or repurposing talent and to avoid waste.

Recommendations and Future Research

This manuscript examines the contingent relationships between human resource management and management capacity in several
hundred public organizations over a several-year period. The interactive impact of these management variables varied greatly depending on the outcome indicator assessed. The variance in how management capacity and human resource management interact for different outputs of these organizations implies the need for strategic decision making among top managers. For those districts that need to emphasize basic performance on standardized tests, one can increase capacity and it will augment the impact of HRM. For those districts that desire to emphasize the performance of college bound students, the need is to limit the size of the central office bureaucracy to get the maximum benefit from teachers in the classroom. Of course, this choice is not unconstrained. Organizations have multiple goals and exist in radically different environments. An organization facing a turbulent environment with frequent major disruptions will likely need the management capacity to deal with these shocks and thus cannot reduce its central management capacity without jeopardizing its performance in a variety of other areas.

This analysis focuses on the most common form of bureaucracy: public schools. Schools differ from other public organizations as they retain primary control over educating students and deliver services mostly within their organizations (Meier and O’Toole 2006). We argue that public schools and other bureaucratic agencies are more alike than different. Schools take on mechanistic principles of organization (grounded in Taylor’s scientific management) such as division of labor, span of control, and unity of command. Like police departments and welfare offices, street-level bureaucrats in schools (teachers) operate with large amounts of discretion where performance is scrutinized and politicized. Our findings are generalizable to other highly professionalized organizations with decentralized decision-making processes. The heterogeneity of these data extends applicability of our recommendations to small and large agencies with varied amounts of resources with which to increase capacity or practice quality human resource management.

Broadly, this article demonstrates the multifaceted nature of public management. While “management matters,” management consists of many functions. Meier and O’Toole (2011) demonstrate that a number of managerial activities are uncorrelated which calls for careful and distinct treatment as well as consideration of interactive relationships. The building of capacity as well as the development of human capital is necessary for top managers, yet this analysis contends that the correct symbiotic relationship is a process of trial and error. Capacity building is likely to vary across organizational contexts, and the perfect combination of these strategies depends on a host of contingencies including environmental factors, available pools of resources (human and financial), stated goals, organizational type, and managerial style—to name a glaringly apparent few. Conceivably, varied goals at different time points might afford managers opportunities to practice a dual strategy of sorts—allowing for some goals to have different “mixtures” of these management aspects (i.e., greater attention to building capacity versus strategic development of human capital) when appropriate.

When organizations seek to focus their efforts on goals in certain areas, skilled managers must be aware of the ability of these mechanisms to undercut each other, and to do so in possibly counterintuitive ways. Like these data, similarly situated organizations will have a threshold point at which trade-offs begin, while variations in threshold points will depend on the type of organization as well as its goals. In particular, the role of management capacity in negating the positive impact of human resource management for some outputs needs to be part of management’s strategic and tactical calculus.

We do not suggest a “one-size-fits-all” management strategy. Knowledge abounds that both areas of management studied here are critical to effective organizational performance. The findings do provide concrete justification for anticipating situations where adjustment to one area, contingent on the other, is appropriate. The “nailing down” of an optimal synergy remains an exercise for public managers and their individual organizations—the variation in performance outcomes might call for an ever-moving nail.

Notes

1. District characteristics included as predictors are the district’s total budget, tax rate, and average revenue per student; these district characteristics are logged. Four human capital characteristics are included: experience as a superintendent, tenure in the current job, age, and possession of a doctorate. Personal characteristics included are whether the superintendent is female, black, or Latino. The adjustment for prior year’s test scores is also included because we think managerial quality is affected by prior performance, and quality then affects future performance. Over time, in other words, there is reciprocal correlation. The adjustment for this endogeneity is handled using an instrumental variables technique. Six student characteristics and district resources are used as instruments; the purged measure of prior performance is then included in the model.

2. The measure as a result captures both stability and another aspect of capacity—the latter in the sense of knowledge about the organization.

3. There are fewer data on SAT or ACT scores because some students take only one of these exams and not the other.

4. When these models are run for African American students and Latino students, the contingent effects appear to be even larger than they are for all students.

References


