

**Exploring Why Public Organizations Ingest Innovations**

Sergio Fernandez

&

Lois R. Wise

Indiana University  
School of Public and Environmental Affairs  
1315 E. Tenth Street  
Bloomington, Indiana 47405

October 15, 2007

Paper presented at the Public Management Research Conference,  
Tucson, Arizona, October 25-27, 2007.

## **Abstract**

Organizational change sometimes occurs as organizations “ingest” innovations from without. This process represents a vital form of organizational learning and adaptation to the external environment. Our study seeks to understand the factors that predict the adoption of Foreign Professional Specialty Occupation Visas, or H-1B visas, by Texas public school districts. The use of H-1B visas to hire foreign skilled workers is a staffing innovation growing in use among public and private organizations. We consider three sets of factors frequently used in studies of organizational innovation: organizational size and slack; attitudes and dispositions of organizational leaders; and environmental factors. The findings contribute to our understanding of ingested innovations, indicating that slack resources, influences from the task and institutional environments, and the organizational leader’s disposition and behavior relating to change influence the probability of adopting this staffing innovation.

A number of studies challenge the prevailing assumption that public organizations and their employees are resistant to change. Public organizations appear to undergo frequent change in function and form (Frederickson and Johnston 1999; Grote 2000; Meyer 1979; Peters and Hogwood 1988; Rainey and Wise 1999; Rainey 2003). Indeed, the turbulent environment of public organizations, and the myriad and competing claims placed on them by external stakeholders, can make lasting organizational change difficult, as new changes are mandated before previous ones can be implemented and institutionalized (Meyer 1979). A variety of forces act upon organizations and cause them to undergo change (Barley and Kunda 1992; Kaufman 1969, 1991; Lindquist 1999; Light 1997; Fernandez and Rainey 2006; Wise 2002; Zaltman, Duncan, and Holbek 1973). Public organizations sometimes undergo rational adaptive changes in response to their task environment in order to improve their effectiveness and efficiency (Scott 2003; Halligan 1999; Kaufman 1969; March and Olsen 1989; Lane 1999). Formal policy changes or other pressures from the institutional environment, as well as progression through stages of their life cycle, also help to account for why organizations undergo change (Kaufman 1991; Downs 1967; Kimberly Miles, and Associates 1980; Quinn and Cameron 1983). Moreover, in addition to homegrown or bottom-up innovation, change often occurs as organizations “ingest” innovations from without, a vital form of organizational learning and adaptation to the external environment (Simon 1997). The diffusion of innovations across jurisdictional boundaries, as witnessed by the spread of new public management ideas throughout governments in the United States and abroad, is illustrative of this phenomenon (Christensen, Lægreid, and Wise 2002; Hood 1996; Kettl 2000; Pollitt and Bouckaert, 2000; Pollitt 2001).

In the public sector, some organizational changes are large in scale and garner considerable interest, particularly changes adopted as part of broad administrative reform initiatives (Kettl 2000; Stillman 1999). New public management reforms in the United States and abroad have involved

the simultaneous adoption and implementation of multiple innovations and changes that at times interact with each other, causing either synergies or trade-offs between them (Chakerian and Mavima 2000). Changes on a smaller scale, however, including micro-level deviations from existing practice, incremental changes in rules and procedures, and the adoption of managerial innovations and new technologies, appear to occur quite frequently and without much fanfare. One such managerial innovation is the use of the Foreign Professional Specialty Occupation Visa (H-1B) by public organizations in the United States. This nascent but growing trend in the public sector has garnered little interest among public management researchers. In a competitive and globalized environment, innovative managers in all sectors are increasingly tapping foreign labor markets to acquire skilled labor, a resource vital for the achievement of organizational goals (US Department of Homeland Security 2003). Yet, we know little about the factors that lead managers to take this innovative course of action. In this study, we set out to identify individual, organizational, and environmental factors that explain the adoption of H-1B visas as a staffing innovation. We focus on public school districts in Texas. The field of education is one of the leading occupational groups recruited under the H-1B visa program (US Department of Homeland Security 2003) and Texas public school districts have been identified as the highest users of the H-1B visa program of any school districts in the United States (Barber 2003, p. 4).

In the next section, we provide a brief overview of the H-1B visa program. We then review the literature on organizational innovation and derive a number of hypotheses about factors influencing the adoption of H-1B visas as a staffing innovation. Subsequently, we present the methodology and data and the results of our empirical analysis. In the last section, we discuss our findings and draw conclusions for policy and research.

## **Foreign Specialty Occupations Workers**

The Foreign Specialty Occupations Visa, or H-1B program, was created by the Immigration and Control Act of 1990. It pertains to individuals who hold at least a bachelor's degree or its equivalent and qualify for a specialty occupation. The Department of Labor first certifies a specific employer's application to fill a position with a foreign professional. Subsequently, that individual executes the process for obtaining a visa. Generally, applying employers are required to pay a fee, but schools and universities and some non-profits are exempt from this payment. Congress sets an annual limit on the number of persons who may be admitted as first-time applicants under the H-1B visa program. Individual visas may be renewed for an additional three years. The H-1B Visa Reform Act of 2004 (HR4818) made some important changes in the visa program. In addition to changes in the fee structure, it made an additional 20,000 visas available to people who had earned a master's degree from a US institution. Annual caps have ranged from 65,000 to 195,000. One think tank has taken the position that the hiring caps should be returned to the 195,000 level to alleviate the teacher shortage and points to declared shortfalls of math and science teachers in Texas public schools as one indicator of the need for more foreign teachers (Johnson 2005, p. 2).

Since the documentation available pertains to employers' applications for certification to hire foreign professionals, the data provide evidence of perceived demand for skilled labor and innovativeness on the part of organizations and their leaders in resolving their need for specific specialty occupations. School districts, in particular, have been especially active users of this mechanism for pursuing teachers and other education professionals. Labor shortfalls in the supply of qualified teachers are said to affect every state in the period of our study (Allen 2003, p. 488). Contemporary shortfalls in the supply of qualified teachers were predicted since the 1980s and are grounded in many different causes (Ingersoll 2001), but contributing factors in the state of Texas include a legislated requirement to offer bilingual education and an apparent shortage of math and

science teachers. Several studies report that school districts in metropolitan areas send recruiters to other countries to recruit applicants (Barber 2003; Ingram and Salas 2006; Zazona.com 2003).

Under a different policy mechanism which supplies a substantial number of teachers, the J1 Exchange Visitor Program, The Texas Education Agency has recruited teachers from Spain since 1998.<sup>1</sup> One Texas School Trustee proposed that Dallas meet its need to fill 400 positions for bilingual teachers by finding a mechanism to recruit qualified illegal aliens currently in the state (Treviño 2006). Through its Regional Service Centers, the Texas Education Agency certifies foreign teachers under its Alternative Certification Program (Barber 2003, p. 12). A study commissioned by the National Education Association estimated the number of foreign teachers working in the US in 2003 under the H-1B visa program were between 6,000 and 7,000.

### **Explaining the Adoption of Innovation**

Cyert and March (1963) loosely defined innovation as “a new solution to a problem that currently faces the organization (p. 188). Some authors have used the term innovation in reference to the invention of a new process, practice, product or service by an organization (Barnett 1953; Becker and Whisler 1967). The emphasis here is on the “newness” of the innovation, along with the implication that no other organization had generated the idea before. Pierce and Delbecq (1977), conversely, stress that innovation takes place when new processes, products, or service are generated, accepted, and implemented for the first time within a particular organization, “regardless, of whether other industries have already proceeded through the process” (p. 28; see also Lewis and Seibold 1993; Mohr 1969; Knight 1967).

For some experts, the scale or magnitude of change is a key factor in the distinction between change and innovation. Hage (1999), for example, distinguishes between change and innovation

---

<sup>1</sup> The J1 Program is more than an employment vehicle as it emphasizes cultural exchange. State departments of education, school boards, and other organizations can be designated by the US State Department as sponsors for recruiting teachers under the J1.

(Hage 1999), with innovation referring to a smaller and more specific new development rather than a larger or more multifaceted change. March and Simon (1993) saw initiation and innovation as substantial changes or departures from current policies and practices that require the “devising and evaluation of new performance programs that have not previously been a part of the organization’s repertory and cannot be introduced by a simple application of programmed switching rules” (p. 195); smaller-scale and routine changes within the existing framework of the organization’s mission and operating procedures, such as monthly changes in an organization’s level of output, do not constitute innovation.

Some research on innovation has endeavored to identify the conditions that make organizations innovative. Characteristic of these efforts, Linden (1990, 1994) found that the most innovative organizational leaders possessed several characteristics, including engaging in strategic decision making; using their political skills to build support for change, both within and outside the organization; convincing organizational members of the need for change; and empowering them to innovate by providing the discretion and resources necessary to make improvements in the organization. His work also pointed to the need to make structural changes to the organization to make it more innovative, particularly the move toward greater reliance on teams that bring together employees with different skills, functional responsibilities, and interests. In a similar vein, Light’s (1998) study identified a lengthy list of conditions conducive to innovation, including building external support for the organization and its mission; encouraging participation and flattening the organization by delegating authority to subordinates; engaging in performance measurement and continuous learning and quality improvement; and inspiring subordinates to bring forth new solutions to existing problems, even those that might fail.

The bulk of the empirical research on innovation, however, has focused not on the conditions that make organizations more likely to generate innovations in function and form but

rather on the diffusion and adoption of innovations that originate from beyond the boundaries of the organization (Rogers 2005; Greve and Taylor 2000; Meyer and Goes 1988; Baldrige and Burnham 1975; Rosner 1968). Simon (1997) coined this type of innovation “ingested” innovations. A number of these studies have examined public management reforms and innovation (Berry 1994; Berman and Wang 2000; Bingham and Wise 1996; Christensen, Lægreid, Wise 2002; Julnes and Holzer 2001; Poister and Streib 1999; Wise 1999), with the focus typically on the rate of adoption of innovations across organizations, rather than single case studies of innovation in one organization (see Hage 1999). As Meyer and Goes (1988) observed about research on the adoption of innovation, “few research questions have spanned so many social science disciplines, elicited such an outpouring of empirical research, and yielded so few unequivocal answers... No real theory has emerged that permits researchers to predict the extent to which a given organization will employ a given innovation” (p. 897). Notwithstanding the theoretical richness found in this body of research and the diversity of hypotheses that have been tested, we find that researchers have consistently focused on three sets of factors influencing the adoption of innovations (Baldrige and Burnham 1975; Pierce and Delbecq 1977; Mohr 1969; Damanpour 1996; Daft 1978; Rosner 1968; Greve and Taylor 2000; Wise 1999): organizational structure, size, and slack; the attitudes and disposition of leaders and other members of the organization; and environmental factors. Below we discuss these factors and explain their expected effects on the probability of adopting H-1B hiring visas.

### **Organizational Size and Complexity**

The affect of organizational size on change and innovation has been a topic of debate among organization theorists. Organizational size appears to be related to various other factors that make organizations either resistant to or open to change. Population ecology theorists have contended that large, mature organizations have a limited capacity to change due to structural inertia (Hannan and Freeman 1984). Larger organizations emphasize predictability, formalization, and control. As a

result, they become rigid and less disposed to change. Change can be so disruptive to larger organizations that it can adversely affect performance to the point of organizational decline and death (Amburgey, Kelly, and Barnett 1993). Population ecologists have recently begun to relax the assumption of structural inertia to allow for the possibility of strategic change and adaptation to the environment, but this assumption remains a central and controversial component of this theory (Aldrich 1999).

Other researchers, however, have maintained that organizational size is positively related to change and innovativeness (Daft 1978; Damapour 1992; Baldrige and Burnham 1975; Blau 1970; Kimberly and Evanisko 1981; Pierce and Delbecq 1977). Various explanations have been offered for this relationship. One pertains to the growth in organizational complexity and differentiation resulting from larger size. Larger organizations exhibit higher levels of complexity and differentiation. This promotes innovation by increasing “the quantity of alternatives and solutions to unique problems facing the organization and its members (Baldrige and Burnham 1975). In addition, greater complexity resulting from larger size stimulates innovation by creating challenges with coordination and control, which often have to be met through new innovations in technology and administrative practice (Blau 1970; see also Kimberly and Evanisko 1981). Finally, larger organizations with more resources and legitimacy are more likely to absorb the costs of failed innovations than smaller ones (Daft 1978; Damapour 1996). Given the conflicting insights offered by the literature concerning the effects of organizational size on the adoption of H-1B visas as a staffing innovation, we propose the following hypothesis:

*H1. Organizational size will be related to the probability of adopting H-1B hiring visas, although the direction of the relationship could either positive or negative.*

In addition to the overall size of an organization, the size of its administrative component, or the percentage of staff dedicated to administrative matters, also seems to influence the likelihood of adopting innovations, especially administrative innovations, like the use of H-1B visas. As Damanpour explains (1996), administrative innovations are innovations in organizational structure, administrative practices, and human resources, whereas technical innovations are innovations in products, services, and the technology used to produce them. The former are related more to the management of the organization, while the latter pertain more to the basic work of the organization and its sub-units. As the administrative component of an organization increases, so should the level of demand for administrative innovations that improve coordination, control, and the securing of vital inputs for the organization (Daft 1978). Moreover, organizations with a larger administrative component are more likely to have the necessary technical and support staff and specialized resources to engage in the search for innovations and to support and coordinate their implementation (Baldrige and Burnham 1975; Damanpour 1996). Thus the following hypothesis:

*H2. The size of an organization's administrative component will have a positive effect on the probability of adopting H-1B hiring visas.*

### **Slack resources**

Innovation, although often undertaken in pursuit of gains in efficiency and greater adaptability to the environment, can be inefficient and detrimental to the reliability of the organization's operations in the short run (Blau 1970). As Rosner notes, therefore, the organization "must be willing and able to accept the costs and the temporary dislocations associated with change" (p. 615; see also Fernandez and Rainey 2006; Berry 1994). It is for these reasons that researchers have argued that slack resources are need by organizations to adopt and implement innovations. According to Cyert and March (1963, pp. 188-189), the distribution of slack makes resources available for projects that would not be approved when resources are scarce and control

over the budget is tight. Moreover, when slack is present, the criteria for acceptance of courses of action are relaxed, increasing the probability that decisions to spend slack resources on innovations will be approved. Conversely, when resources are scarce, more conservative rules for the allocation of resources predominate, making it more difficult to obtain approval for spending on projects other than on-going ones. We therefore propose the following hypothesis:

*H3. The amount of slack resources in the organization will have a positive effect on the probability of adopting H-1B hiring visas.*

### **Leadership Characteristics**

A significant body of research indicates that managerial leaders can and frequently do make change happen in their organizations. Burke (2002) maintains that even though some scholars claim that leadership matters little for organizational outcomes (e.g., see Hannan and Freeman 1984; Kaufman, 1981), the bulk of the evidence indicates otherwise, particularly with respect to the initiation, adoption, and implementation of organizational change (p. 271; see also Judson 1991; Jaffe, Scott, and Toby 1994; Kotter 1995; Armenakis, Harris, and Field 2001; Armenakis and Bedeian 1999). Yukl (2002) argues, “leading change is one of the most important and difficult leadership responsibilities. For some theorists, it is the essence of leadership and everything else is secondary. Effective leadership is needed to revitalize an organization and facilitate adaptation to a changing environment” (p. 273). Public management research also indicates that managerial leadership has a significant effect on organizational change. For instance, Hennessey (1998), who studied the impact of leadership on the outcomes of reinvention in the public sector, concluded that effective leaders facilitated the changes in culture and organizational climate envisioned by the reinventers, and that these changes in turn contributed to higher organizational performance. Kemp, Funk, and Eadie (1993) found that successful implementation of strategic management in the EEOC was partly attributable to the top executive’s continual efforts to convey the message that change

was high on his list of priorities. Similarly, Bingham and Wise (1996), in their study of the implementation of alternative dispute resolution (ADR) techniques in the federal government, found that many agencies failed to fully adopt ADR due to the inability of top management to disseminate information about the new policy and convince employees of the need to implement it. In short, Texas public school districts with a leader who sees his or her role as that of a change agent should be more likely to adopt H-1B visas as a staffing innovation.

*H4. Organizations with a leader who sees his/her role as that of a change agent will have a higher probability of adopting H-1B hiring visas.*

Recently, some studies have begun to show that a change in top management can be a catalyst for other types of organizational change. Boeker (1997) described the movement of top managers across organizations and how this movement influenced an organization's decision to enter new product markets. Similarly, Kraatz and Moore (2002) found that the migration of presidents of liberal arts colleges in the United States had a strong relationship with the adoption of new professional programs by these colleges, controlling for the effects of various organizational, social, and economic factors. New executives seem to promote change in organizations through the transfer of knowledge, interorganizational learning, the introduction of new cognitive models and assumptions, and the attenuation or displacement of existing organizational values. Similarly, research demonstrates that executives with long tenure in a particular organization are less likely to support change (Wiersma and Bantel 1992). We propose the following hypothesis:

*H5. Leadership tenure will have a negative effect on the probability of adopting H-1B hiring visas.*

### **Task and Institutional Environments**

Through the 1950s, organization theorists generally treated organizations as closed systems, with decisions about how to structure and manage organizations exogenous to external

environmental influences. The advent of systems thinking and contingency theory in the 1960s caused a fundamental shift in our understanding of organizations (Scott 2003; Rainey 2003). Since then, leading theoretical approaches to the study of organizations, including contingency theory, resource dependence theory, population ecology, new institutional economics, and neo-institutional theory, have focused on the influence of the external environment on organizational structure, strategy, and decision making, as well as on organizations' ability to adapt to the environment, extract resources from it, and manage interdependent relationships with external actors.

The primary focus of researchers through the 1970s was on the task environment. As Scott (2003) explains, the task environment "is broadly defined as all aspects of the environment 'potentially relevant to goal setting and goal attainment' but is typically narrowed in use to refer to the nature and sources of inputs, competitors, and markets for outputs. The conception [of the task environment] emphasizes that most organizations are created to achieve goals, to perform some type of work. More important, it stresses that no organization is self-sufficient; all must enter into exchanges with the environment" (p. 133). When organizations interact with their task environment, the primary imperative is to adapt to it in ways that enhance efficiency and effectiveness.

Over the last three decades, the emergence of neo-institutional theory has provided for a more sophisticated understanding of external environments and their role in helping to shape organizational structure and decision making (DiMaggio and Powell 1983; March and Olsen 1989; Meyer and Rowan 1977; Powell and DiMaggio 1991; Scott 2003, 2001; Zucker 1987). Institutional environments are populated by a variety of public and private stakeholders, including governmental regulators, professional associations, and trade groups. These institutional actors uphold certain norms, values, rules, and cognitive systems that help to regulate social interaction. Organizations, in order to gain legitimacy, adapt to the institutional environment by changing their function and form

to conform to these norms, values, rules, and cognitive systems. As Aldrich explains, neo-institutional theorists see change as primarily "external in origin, generated as organizations are forced to respond to, adapt to, or imitate the ebb and flow of normative and regulatory currents in their environments" (1999, p. 49). In short, organizations change and adapt in response to pressures emanating from both the task and institutional environments, although the strength of these technical and institutional pressures vary across populations of organizations (Scott 2003).

Organizations interact with the task environment by producing products and services that satisfy the demands of customers and by securing the inputs necessary to produce those outputs. In our analysis, we account for these two types of interactions with the task environment. The primary task of public school districts is to produce educational services, not just basic K-12 educational services but more specialized ones, including bilingual education, vocational training, and advanced math, and science training. An increasing demand for specialized educational services should increase the likelihood of public school districts adopting innovations that allow them to acquire the personnel necessary to produce such specialized services. Similarly, as vital inputs, especially skilled labor, become increasingly scarce, the probability of adopting staffing innovations that can effectively secure these human resources should increase. We therefore propose the following two hypotheses:

*H6. The demand for specialized services placed on the organization will have a positive effect on the probability of adopting H-1B hiring visas.*

*H7. The organization's need for human resource inputs will have a positive effect on the probability of adopting H-1B hiring visas.*

In the institutional environment, regulators and political principals, trade associations, and the professions are actors who exert normative pressures on organizations. This analysis explores the influence of state legislators and officials from the Texas Education Agency on school district adoption of H-1B visas. Although these two institutional actors are principals with political authority over public school districts, their influence on the adoption of H-1B hiring visas may be cognitive-cultural as well as coercive, by encouraging the hiring of foreign skilled workers as good practice for securing vital human resources. The Texas Education Agency has long supported the hiring of foreign professionals and provides an alternative certification program for them. Its approach appears to be more grounded in the cultural and professional norms of educators than the economics of human capital. On the other hand, no formal policy has been enacted in Texas calling for the use of H-1B visas by state and local governments and public school districts. This may discourage public school districts from using H-1B hiring visas. In short, the effects of normative pressures from state legislators and officials of the Texas Education Agency on the adoption of this staffing innovation may either be positive or negative.

*H8. Interaction with state legislators and members of the Texas Education Agency will be related to the probability of adopting H-1B hiring visas, although the direction of the relationship could either positive or negative.*

### **Methodology and Data**

Our unit of analysis in this study is the Texas public school district. The dependent variable is measured as a count of the number of H-1B visa applications filed by a Texas public school district during the period from October 2000 to September 2002. The data for the dependent variable were gathered from the US Department of Labor, Bureau of Labor Statistics. All H-1B

visas applications filed by Texas employers during this two-year time period were coded to identify the applications by Texas public school districts. Approximately 83% of these applications were for school teachers.

All of the independent and control variables are measured using data from 1999 that were gathered by the Texas Education Agency and the Texas public school superintendent survey conducted by Meier and O'Toole (2002, 2003). When we merge these three data sources, we obtain a sample of 532 public school districts in Texas.

Poisson or negative binomial regression models are preferred when analyzing count dependent variables, such as the number of H-1B visa applications filed by a school district, since ordinary least squares (OLS) regression results in inefficient, inconsistent, and biased estimates (Long 1997; Long and Freese 2006). Our dependent variable poses an additional challenge, however, since approximately 87% of the observations have a value of zero on the dependent variable, indicating that only 13% of the school districts in our sample applied for at least one H-1B visa between October 2000 and September 2002. To predict the number of H-1B visa applications filed by Texas public school districts, we use zero inflated negative binomial (zinb) regression, a regression model for count dependent variables that accounts for the under-prediction of zeros by using two distinct processes to predict them (Lambert 1992; Long and Freese 2006). Unlike other count models, zinb regression does not assume that every observation has the same probability of achieving a value of one or higher on the dependent variable. In the case of H-1B visa applications, we should not assume that every school district has the probability of using this hiring innovation, since some may lack sufficient financial, administrative, and human resources necessary to search for, learn about, and implement this innovation. Additionally, school districts even within the same

metropolitan area may differ substantially in staffing needs and ability to attract potential employees to meet those demands (Ingersoll 2001).

We measure organizational size in terms of the number of employees working for the public school district: total full-time equivalent teachers working for the school district and total full-time equivalent staff employed by the school district. We also measure organizational size in terms of total revenues and total student enrollment. The size of the organization's administrative component is measured as the percentage of staff in central administration and the percentage of total expenditures spent on central administration. Our measure of slack resources is the amount of surplus funds available to the school district at the end of fiscal year 1999-2000.

Organizations interact with the task environment in order to secure the inputs necessary to achieve their formal goals. Scarcity of key inputs, especially of teachers, should drive school districts to adopt innovations that allow them to more effectively secure such resources. We measure a school district's need for teachers using the following indicators: student-teacher ratio; teacher turnover rate; and percentage of non-certified teachers in a school district. Demands from the task environment for specialized educational services, such as special, bilingual, and vocational education, might also induce these organizations to adopt this hiring innovation. We measure demand for these specialized educational services using indicators of the percentage of students in special education, bilingual education, vocational education, and gifted classes in a school district. In order to estimate the effects of interaction with regulators in the institutional environment on the adoption of H-1B hiring visas, we include ordinal measures of the extent to which the school district superintendent interacts with state legislators and officials from the Texas Education Agency.

The leader's predisposition toward change is measured using an ordinal indicator of the extent to which the district superintendent sees his or her role as that of a change agent. In addition, we measure the leader's tenure as the number of years the superintendent had served in that capacity.

Finally, we include controls for revenues per pupil and percentage of funds from local sources for the school district. The descriptive statistics for the independent and control variables are presented in Table 1.

---Insert Table 1 about here---

## **Results**

In this section, we present the results of the zlnb regression model. Zlnb models provide two sets of regression coefficients. The first set of coefficients, which can be interpreted as those from a binary logit model, show the effect of a regressor on the likelihood of being in the group that has a value of zero on the dependent variable, i.e., of being in the group that has not applied for an H-1B visa. These coefficients are of primary concern to us, as they allow us to estimate the effects of independent variables on the probability of adopting this innovation. The second set of coefficients represents the effects of a regressor on the number of H-1B visas applications by school districts that have a value of one or greater on the dependent variable (i.e., on the number of H-1B visa applications by only those school districts that applied for at least one H-1B visa). While these other coefficients do not differentiate between adopters and non-adopters, they do allow us to predict the extent to which adopting organizations rely on this innovation to hire foreign skilled workers.

We begin by examining the first set of coefficients to predict adoption versus non-adoption of H-1B visas. These coefficients are presented in the column labeled Inflation Model in Table 2. Four variables are used to measure organizational size: total full-time equivalent teachers, total fte staff, total revenues, and total enrollment. The coefficient for total fte teachers is negative and statistically significant ( $p < 0.05$ ), indicating that an increase in total fte teachers lowers the probability of being in the group of school districts that have not applied for an H-1B visa. Stated differently, an increase in total fte teachers increases the odds of having applied for an H-1B visa by a factor of 0.45. Conversely, the coefficient for total fte staff is positive and statistically significant ( $p < 0.05$ ), indicating that an increase in total fte staff increases the probability of being in the group of school districts that have not applied for an H-1B visa. Stated differently, an increase in total fte staff lowers the odds of having applied for an H-1B visa by a factor of 1.07. The total revenues and total enrollment measures of organizational size have no effect on the probability of having applied for an H-1B visa. We fail to find consistent support for Hypothesis 1.

----Insert Table 2 about here----

Our second hypothesis states that an organization's administrative component will have a positive effect on the adoption of H-1B hiring visas. We measure a public school district's administrative component as the percentage of staff working in central administration and the percentage of expenditures on central administration. An increase in the percentage of staff in central administration increases the probability of being in the group of school districts that have not applied for an H-1B visa ( $p < 0.05$ ). However, we find that an increase in the percent of total expenditures that are spent on central administration lowers the probability of being in the group of school districts that have not applied for an H-1B visa application ( $p < 0.05$ ). In other words, the percentage of staff in central administration has a negative effect on the odds of adopting H-1B

hiring visas while the percent of total expenditures spent on central administration has a positive effect on the odds of adopting this staffing innovation. In short, the evidence is inconclusive as to whether or not the size of these organizations' administrative component positively affects the adoption of this innovation.

Whereas the results above fail to show that the overall size of the organization influences the likelihood of adoption, they do indicate that the size of different groups or coalitions within public school districts affects the likelihood of adoption. Total teacher fte has a positive effect on the adoption of H-1B visas. Conversely, total staff fte and the percentage of that staff that are in central administration have a negative effect on the adoption of H-1B visas. Organization theorists have described organizations as complex systems composed of various coalitions with different values, perspectives, and interests who compete with each other for influence over key decisions affecting the organization (Pfeffer and Salancik 1978; Thompson 1967; Cyert and March 1963; Greenwood and Hinings 1993). These decisions involve not only the goals pursued by the organization, but in more differentiated and loosely coupled organizations, the distribution of resources among the different coalitions (Scott 2003). While the H-1B visa is an administrative innovation in the sense that it is an approach that can facilitate the acquisition of human resources, teachers should stand to gain more from the adoption of this innovation than staff. Over four-fifths of the H-1B applications that were filed by these organizations were for teachers, meaning that the use of this innovation increases both the numbers of teachers in public school districts as well as the percentage of resources allocated to teacher salaries. The use of H-1B visas might therefore be viewed by teachers as a means for strengthening their political influence within the organization vis-à-vis that of staff. From an organizational power and politics perspective, therefore, our results make sense. They also suggest that the size of the coalition that stands to gain the most from an innovation may be a stronger determinant of adoption than the overall size of the organization.

Slack resources, measured as the percent surplus funds at the end of the fiscal year, has a coefficient that is negative and statistically significant ( $p < 0.05$ ). This indicates that an increase in the percent of slack funds at the end of the fiscal year lowers the probability of being in the group of school districts that did not apply for an H-1B hiring visa. Stated differently, an increase in the percent of slack funds at the end of the fiscal year increases the odds of applying for an H-1B visa by 1.00. The results support Hypothesis 3. Previous studies of innovation have suggested that slack resources are necessary for the development of novel innovations that cannot be learned and borrowed from other organizations. Even in the case of an ingested innovation like this one, which is relative small in scale and which minimizes the costs of development, slack resources may still be required to support the costs involved in searching for, learning about, and implementing the innovation. Some of these costs include, but are not limited to, recruitment expenses; administrative and legal costs involved in processing the visa applications; and training costs, including certification programs in some public school districts.

Hypotheses 4 and 5 concern the role of the organization's leader in the adoption of innovation. We find that as the superintendent increasingly sees his/her role as that of a change agent, the probability of being in the group of school districts that have not applied for an H-1B visa declines ( $p < 0.05$ ). Stated differently, the odds of adopting H-1B visas as a staffing innovation increases by 3.19 as the leader increasingly views his/her role in the organization as an agent for change. The literature offers considerable evidence that leaders can be catalysts for change and innovation, by introducing new ideas and championing them, encouraging and rewarding experimental and entrepreneurial behavior among subordinates, and marshalling resources for the search, acquisition, and implementation of new ideas (Fernandez and Rainey 2006). The results support this proposition. However, they fail to support Hypothesis 5. The variable leader tenure fails to achieve statistical significance, even at the  $p < 0.10$  level. In a dynamic and uncertain

environment like public education, where school enrollments change rapidly from year to year and teacher turnover is generally high, getting a grasp of the situation and establishing some stability within the organization could be just as if not a more important task for newer superintendent than attempting to initiate organizational changes.

To explore the effects of the need for personnel on the adoption of H-1B visas, we used indicators of the district's student-teacher ratio, teacher turnover rate, and percentage of non-certified teachers. The results provide some support for Hypothesis 7, which states that the organization's need for human resource inputs will have a positive effect on the adoption of H-1B hiring visas. The coefficients for percent of teachers not certified and for teacher turnover fail to achieve statistical significance at the  $p < 0.05$  level. However, as the student-teacher ratio increases, the likelihood of being in the group of schools that have not applied for an H-1B visa decreases. Stated differently, increases in the student-teacher ratio increases the odds of applying for an H-1B hiring visa. H-1B visas may facilitate the acquisition of scarce human resources, especially teachers and other education specialists, who are needed to accomplish vital organizational tasks. We note again that approximately 83% of the H-1B visa applications filed by Texas public school districts between October 2000 and September 2002 were for teachers.

We also find support for Hypothesis 6, which states that the demand for specialized services will have a positive effect on the adoption of H-1B hiring visas. As the percentages of students in special education, bilingual education, and vocational education increase, the probability of being in the group of schools that has not applied for an H-1B hiring visa decreases. In other words, increases in the percentage of students in special, bilingual, and vocational education increases the odds of adopting this staffing innovation. Increasing demand for specialized

educational products/services appears to encourage these organizations to use H-1B visas to more effectively secure the teachers and other education specialists needed to meet these demands.

The institutional environment also appears to influence the adoption of H-1B visas. We measure pressure from the institutional environment as the frequency with which superintendents interact with state legislators and officials from the Texas Education Agency. We find that increases in the frequency of interaction with state legislators and interactions with officials from the Texas Education Agency increase the probability of being in the group of school districts that have not applied for an H-1B hiring visas. Stated differently, increases in the amount of interaction with state legislators and officials from the Texas Education Agency decrease the odds of using H-1B hiring visas by factors of 1.77 and 3.46, respectively. These results lend support for Hypothesis 8. Institutional pressures for homogeneity in structures and practice seem to dissuade school districts from adopting this hiring innovation, probably because it was a relatively new practice that lacked widespread acceptance among political actors during the earlier part of this decade. While the Texas Education Agency was already committed to the promotion of J1 exchange visa during that time, neither the agency nor the Texas state legislature had a formal policy in place to promote the use of H-1B visas by public school districts in the state.

We now turn to a discussion of the second set of zlnb regression coefficients, those indicating the effects of a regressor on the number of H-1B visas applications among only those school districts that applied for visas of this type. Even though we cannot use these coefficients to differentiate between adopters and non-adopters, they do help account for the extent to which the adopting organizations rely on this innovation to hire foreign skilled workers. The results show that various factors in the task environment influence the extent to which the adopting organizations use

H-1B hiring visas. The need for human resources, especially teachers, appears to positively effect the number of H-1B visa applications filed by Texas public school districts. Among school districts that have applied for at least one H-1B visa, the student-teacher ratio and the teacher turnover rate have a positive effect on the count of H-1B visa applications. We also find that as the percentage of students in bilingual programs increases among the adopting school districts, the number of H-1B visa applications increases as well. Conversely, among the adopting school districts, the percentage of students in special education has a negative effect on the number of H-1B visa applications.

We found that having a leader who sees his/her role as that of a change agent increased the likelihood of a school district adopting H-1B hiring visas as a hiring innovation. Among the adopting school districts, however, we find that neither this variable nor a leader's tenure with the organization affects the number of H-1B visa applications. Leadership behavior, therefore, appears to have no effect on the extent or frequency with which this innovation is used once it has been adopted by the organization. Rather, the role of leadership seems to be as a catalyst for change.

Among those school districts that have adopted H-1B visas as a hiring innovation, we find that an increase in the number of total fte teachers has a positive effect on the count of H-1B visa applications. Larger school districts with more teachers may simply have a greater need for teachers and therefore apply for a greater number of H-1B visas in order to hire them and meet their need. From an organizational power and politics perspective, larger numbers of teachers may be able to exert greater pressure on school districts to file additional H-1B visa applications in order to increase the size of their coalition and secure a greater proportion of their organization's resources vis-à-vis other groups.

Interestingly, among users of this innovation, slack resources are negatively correlated with the number of H-1B visa applications. It appears that a certain amount of slack is necessary for these organizations to invest in and adopt this innovation. As the level of slack increases among the adopters, however, the number of H-1B visa applications declines. Organizations with the most slack are often the early adopters of an innovation. Over time, however, Texas public school districts with the most slack may invest it in more promising or fashionable innovations, thus reducing their reliance on H-1B visas to hire teachers and other skilled workers.

### **Discussion and Conclusion**

In this analysis, we set out to explore the effects of organizational, leadership, and environmental factors on the likelihood of Texas public school districts adopting H-1B visas, a staffing innovation that is spreading in use. Our data show that a very small portion of Texas school districts were using H-1B visas to address labor shortfalls during the period of observation. This creates a challenging but particularly useful context in which to investigate the factors accounting for why some districts adopted the innovation and others did not. Our choice of statistical model took into consideration the relatively low number of adopters of this innovation; we did not assume that each district has an equal probability for innovating since districts may face different conditions of labor supply and demand or may lack sufficient financial, administrative, and human resources necessary to search for, learn about, and implement this innovation.

We tested eight hypotheses and found strong or moderate support for five of them. Slack resources increase the probability of these organizations adopting H-1B visas. While planned organizational changes often are undertaken to improve efficiency and effectiveness, many require resources to launch and sustain them until their impact can be felt. Innovation should be viewed as

an investment that imposes direct costs with the promise of future returns. This is not to say that organizations facing resource scarcity cannot innovate. However, policymakers and managerial leaders hoping to spur innovation in public organizations improve their odds of doing so when providing them with sufficient resources to invest in and implement innovations effectively.

We found weak and inconclusive evidence of organizational size and the size of the organization's administrative component affecting the likelihood of adopting H-1B visas. While organizational size may be an important predictor of the volume of innovations generated by an organization, the size of groups and coalitions vying for influence within the organization appears to be a stronger determinant of the adoption of a particular innovation. We find that an increase in the total number of teachers in these school districts increases the likelihood of adopting H-1B visas. Conversely, increases in the number of staff and in the percent of staff in central administration decreases the likelihood of adoption. School teachers appear to be the main beneficiaries of the adoption of this innovation, as it increases the size of their coalition and the share of organizational resources captured by its members. Because only a small portion of these visas were used to hire staff, this coalition stands to gain less from the adoption of this innovation. Indeed, adoption of H-1B hiring visas may increase the workload of personnel and other support staff employed by these school districts. In short, change and innovation can create winners and losers among organizational groups. Effective leaders should be cognizant of the possibility of resistance to the adoption of any particular innovation and able to ensure the cooperation of different coalitions by means such as convincing them of the need for change; allowing them to participate in the planning for and implementation of the innovation; offering inducements and rewards; and providing safeguards against loss of power or influence within the organization.

When we examine the characteristics of organizational leaders, we find that leaders who view their role as that of a change agent have a positive effect on the likelihood of adopting H-1B visas. Even when controlling for a host of organizational and environmental factors, leadership still matters when it comes to explaining innovation. Our data does not allow us to measure directly a leader's behavior. However, research on organizational roles has shown that they are a powerful predictor of behavior (Simon 1997). Individuals who take on or are assigned a role are expected to engage in a certain pattern of behavior consistent with that role. Leaders, through their behavior, can champion change by actively and enthusiastically promoting an idea; building support for it; reducing resistance to change; marshalling the necessary resources to launch and sustain innovation; and ensuring effective implementation of the idea (Kotter 1995). Entrepreneurial leadership is not a magic bullet that alone can ensure innovation, as we find that other organizational and environmental factors can either further or thwart innovation. However, elected officials wanting to spur innovation and change in public organizations can begin the process of doing so by selecting political appointees who are entrepreneurial and receptive to change.

Finally, we find evidence that the task and institutional environments of these organizations influence the likelihood of their adopting this staffing innovation. The need to reduce the ratio of students to teachers increases the probability of using H-1B visas in order to more effectively secure scarce human resources. Similarly, larger percentages of students in specialized educational programs, such as special, bilingual, and vocational education, increases the probability of adopting H-1B visas. This is indicative of a rational adaptive response to the environment by the leaders of Texas public school districts, as they modify hiring practices with the likely aim of improving organizational performance and reducing their dependence of domestic sources of labor. However,

the results also show that these leaders are responsive to normative pressures, which often promote conformity to institutional norms and practices, even at the expense of efficiency. Conformity aimed at obtaining legitimacy may also be viewed as rational behavior by public managers, who operate in a complex political environment where support from external stakeholders is vital for organizational survival (Wilson 1989; Meier 2000). We find that interactions with actors in the institutional environment, including state legislators and officials from the Texas Education Agency, lower the probability of adopting this hiring innovation. The lack of formal policy regarding the use of H-1B visas by public school districts indicates that the pressures exerted by these institutional actors is not necessarily regulatory in nature and aimed at ensuring legal compliance. Rather, state legislators and officials from the Texas Education Agency, through their interactions with school superintendents, appear to be applying cultural-cognitive controls to enforce conformity with prevailing norms of practice, which to date, may not grant legitimacy to the hiring of foreign skilled workers through the H-1B visa program. During the period of our study, TEA was an official sponsor for the J1 Cultural Exchange program, as noted earlier. It may be that Texas school districts are more inclined to import teachers under the cultural exchange program and that this process is more consistent with institutional norms in the education program than the H-1B visa. Additionally, while use of the H-1B visa would permit teachers to remain employed up to six years and has no requirements regarding return to their original school, the H-1B visa may be seen as more regulated than the J1 exchange program and placing greater burdens on the potential employer for compliance in salary and working conditions.

Our study is based on school districts in one state and at one point in time, factors which may limit the generalizability of our findings to other sectors, states, or time periods. Our

theoretical modeling and results, however, are consistent with a substantial body of previous research on the determinants of innovation. Many of the same factors affecting public school districts—including slack resources, leadership attitudes and roles, and influences from the task and institutional environments—affect other public organizations, particularly local governments. Also, our choice of statistical model, zero-inflated negative binomial regression, offers advantages over using a negative binomial or poisson regression model. While these latter models are appropriate for count dependent variables, they do not account for the under-prediction of zeros (or relatively rare innovation events), a challenge posed by the fact that so few public school districts in Texas applied for H-1B visas during our period of observation.

We also note that our results are quite robust to changes in model specification. For example, we obtained the same pattern of results when we did not include the control variables in our zinb regression model. However, this analysis and future ones of innovation would benefit from the inclusion of additional measures that were not available from our data sources. Organizational size is often used as a proxy measure for structural differentiation, which has been hypothesized to be an important determinant of innovation. More direct measures of structural differentiation would include the number of hierarchical levels in the organization to account for vertical differentiation, and measures of horizontal differentiation, such as the number of divisions or departments within an organization. Also, our measure of the role of change agent only allows us to infer certain behavior as a consequence of that role. Direct measures of change or development-oriented leadership behavior, such as crafting a vision for change, selling the vision to organizational members, and rewarding innovative thinking, would allow us to determine the actual behaviors on the part of the leaders that have the greatest effect on the likelihood of innovation (see Ekvall and Arvonen 1991; Lindell and Rosenqvist 1992a, 1992b; Yukl, Gordon and Taber 2002). Finally, normative pressures on public organizations are not limited to those exerted by political

overseers. We encourage researchers to also explore the effects of such forces as the general political context, public opinion, the professions, and labor unions on the adoption of innovations in the public sector.

## References

- Aldrich, H. 1999. *Organizations Evolving*. Thousand Oaks, California: Sage.
- Allan, M. 2003. "Trends in Teacher Preparation, Recruitment and Retention." *Book of the States*, 488-492.
- Amburgey, T. L., Kelly, D. & Barnett, W. P. 1994. "Resetting the Clock: The Dynamics of Organizational Change and Failure." *Administrative Science Quarterly*, 38: 51-73.
- Armenakis, A. A. & Bedeian, A. G. 1999. "Organizational Change: A Review of Theory and Research in the 1990s." *Journal of Management*, 25: 293-315.
- Armenakis, A. A., Harris, S. G. & Field, H. S. 2001. "Paradigms in organizational change: Change agent and change target perspectives." In Golembiewski, R. T. (Ed.). *Handbook of Organizational Behavior*. New York: Marcel Dekker.
- Baldrige, J. V. and Burnham, R. A. 1975. "Organizational Innovation: Individual, Organizational, and Environmental Impacts." *Administrative Science Quarterly*, 20: 165-176.
- Barber, R. 2003. Report to the National Education Association on Trends in Foreign Teacher Recruitment. <http://www.nea.org/teachershortage/images/foreignteacher.pdf>.
- Barley, S. and Kunda, G. 1992. "Design and Devolution: Surges of Rational and Normative Ideologies of Control in Managerial Discourse." *Administrative Science Quarterly*, 37: 369-99.
- Barnett, H. 1953. *Innovation*. New York: McGraw-Hill.
- Becker, S. W. and Whisler, T. L. 1967. "Some Determinants of Organizational Success." *Journal of Business*, 40: 511-518.
- Berman, E. and Wang, X. 2000. "Performance Measurement in U.S. Counties: Capacity for Reform." *Public Administration Review*, 60: 409-420.
- Berry, F. S. 1994. "Innovation in Public Management: The Adoption of Strategic Planning." *Public Administration Review*, 54: 322-330.
- Bingham, L. B. & Wise, C. R. 1996. "The Administrative Dispute Resolution Act of 1990: How Do We Evaluate its Success?" *Journal of Public Administration Research and Theory*, 6: 383-411.
- Blair, J. 2003. "Visa Cap Jeopardizes Foreign-Teacher Hiring." *Education Week*, 23: 5-6.
- Blau, P. M. 1970. "A Formal Theory of Differentiation in Organizations." *American Sociological Review*, 35: 201-218.
- Boeker, W. 1997. "Executive Migration and Strategic Change: The Effect of Top Management Movement on Product Market Entry." *Administrative Science Quarterly*, 42: 213-36.
- Burke, W. W. 2002. *Organization Change: Theory and Practice*. Thousand Oaks, California: Sage Publications.
- Chakerian, R. & Mavima, P. 2000. "Comprehensive Administrative Reform Implementation: Moving Beyond Single Issue Implementation Research." *Journal of Public Administration Research and Theory*, 11: 353-77.
- Christensen, T., Læg Reid, P. and Wise, L. R. 2002. "Transforming Administrative Policy." *Public Administration* (London), 80: 153-78.
- Cyert, R. M. & March, J. G. 1963. *A behavioral Theory of the Firm*. Upper Saddle River, New Jersey: Prentice Hall.
- Daft, R. L. 1978. "A Dual-Core Model of Organizational Innovation." *Academy of Management Journal*, 21: 193-210.
- Damanpour, F. 1996. "Organizational Complexity and Innovation: Developing and testing Multiple Contingency Models." *Management Science*, 42: 693-716.

- DiMaggio, P. J. & Powell, W. W. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review*, 48: 147-160.
- Downs, A. 1967. *Inside Bureaucracy*. New York: Little, Brown.
- Ekvall, G. and Arvonen, J. 1991. "Change-centered Leadership: An Extension of the Two-dimensional Model." *Scandinavian Journal of Management*, 7: 15-26.
- Fernandez, S. and Rainey, H. G. 2006. "Managing Successful Organizational Change in the Public Sector: An Agenda for Research and Practice." *Public Administration Review*, 66: 168-176.
- Fredrickson, H. G. and Johnston, J. M. (Eds.). 1999. *Public Management Reform and Innovation*. Tuscaloosa, Alabama: University of Alabama Press.
- Greenwood, R. & Hinings, C. R. 1996. "Understanding Radical Organizational Change: Bringing Together the Old and the New Institutionalism." *Academy of Management Review*, 21: 1022-1054.
- Greve, H. R. and Taylor, A. 2000. "Innovations as Catalyst for Organizational Change: Shifts in Organizational Cognition and Search." *Administrative Science Quarterly*, 45: 54-80.
- Grote, D. 2000. "Public Sector Organizations: Today's Innovative Leaders in Performance Management." *Public Personnel Management*, 29: 1-19.
- Hage, J. T. 1999. "Organizational Innovation and Organizational Change." *Annual Review of Sociology*, 25: 597-622.
- Halligan, J. 1999. "New Public Sector Models: Reform in Australia and New Zealand." In Lane, J. (Ed.). *Public Sector Reform*. Thousand Oaks, California: Sage Publications, 17-46.
- Hannan, M. T. & Freeman, J. 1984. "Structural Inertia and Organizational Change." *American Sociological Review*, 49: 149-164.
- Hennessey, J. T. 1998. "Reinventing Government: Does Leadership Make a Difference?" *Public Administration Review*, 58: 322-332.
- Hood, C. 1996. "Exploring Variations in Public Management Reform of the 1980s." In Bekke, A., Perry, J. L., and Toonen, T. (Eds.). *Civil Service Systems in Comparative Perspective*. Bloomington, Indiana: Indiana University Press, 268-87.
- Ingersoll, R.M.. 2001. Teacher Shortages, Teacher Turnover and the Organisation of Schools. *American Educational Research Journal*. 38(3): 499-534
- Ingram, N. W. and Salas, C. U. 2006. "Innovative Approaches to Recruiting Bilingual Educators: Teachers, Counselors, and Administrations." Texas Association of School Personnel Administrators. <http://www.taspa.org/newsletter/online/bestpractice/11.06.html>. Accessed 2/9/07.
- Jaffe, D. T., Scott, C. D. & Tobe, G. R. 1994. *How to Revitalize Yourself, Your Work, and Your Organization: Rekindling Commitment*. San Francisco, California: Jossey-Bass.
- Johnson, K. A. 2005. "How Immigration Reform Could Help to Alleviate the Teacher Shortage." *Backgrounder*, no. 1884, October 5. Washington, D.C.: Heritage Foundation.
- Judson, A. S. 1991. *Changing Behavior in Organizations: Minimizing Resistance to Change*. Cambridge, MA: Blackwell Business.
- Julnes, P. and Holzer, M. 2001. "Promoting the Utilization of Performance Measures in Public Organizations: An Empirical Study of Factors Affecting Adoption and Implementation." *Public Administration Review*, 61: 693-708.
- Kaufman, H. 1969. "Administrative Decentralization and Political Power." *Public Administration Review*, 29: 3-15.
- Kaufman, H. 1981. *The Administrative Behavior of Federal Bureau Chiefs*. Washington, DC: Brookings Institution.

- Kaufman, H. 1991. *Time, Chance, and Organizations*. Second Edition. Chatham, New Jersey: Chatham House.
- Kemp, E. J., Funk, E. J. & Eadie, D. C. 1993. "Change in Chewable Bites: Applying Strategic Management at EEOC." *Public Administration Review*, 53: 129-134.
- Kettl, D. F. 2000. *The Global Public Management Revolution: A Report on the Transformation of Governance*. Washington, DC: Brookings Institution Press.
- Kimberly, J. R. and Evanisko, M. J. 1981. "Organizational Innovation: The Influence of Individual, Organizational, and Contextual Factors on Hospital Adoption of Technological and Administrative Innovations." *Academy of Management Journal*, 24: 689-713.
- Kimberly, J. R., Miles, R. H., and Associates. 1980. *The Organizational Life Cycle: Issues on the Creation, Transformation, and Decline of Organizations*. San Francisco: Jossey-Bass.
- Knight, K. E. 1967. "A Descriptive Model of the Intra-Firm Innovation Process." *Journal of Business*, 40: 478-496.
- Kotter, J. P. 1995. "Leading Change: Why Transformation Efforts Fail." *Harvard Business Review*, Mar/April, 59-67.
- Kraatz, M. S. & Moore, J. H. 2002. "Executive Migration and Institutional Change." *Academy of Management Journal*, 45: 120-43.
- Lambert, D. 1992. "Zero-inflated Poisson Regression with an Application to Defects in Manufacturing." *Technometrics*, 34: 1-14.
- Lane, J. (Ed). 1997. *Public Sector Reform*. Thousand Oaks, California: Sage Publications.
- Lewis, L. K. and Seibold, D. R. 1993. "Innovation Modification during Intraorganizational Adoption." *Academy of Management Review*, 18: 322-354.
- Lindell, M. and Rosenqvist, G. (1992a). "Is There a Third Management Style?" *The Finnish Journal of Business Economics*, 3: 171-198.
- Lindell, M. and Rosenqvist, G. (1992b). "Management Behavior Dimensions and Development Orientation." *Leadership Quarterly*, Winter: 355-77.
- Light, P. 1997. *The Tides of Reform*. New Haven, Connecticut: Yale University Press.
- Light, P. 1998. *Sustaining Innovation: Creating Nonprofit and Government Organizations that Innovate Naturally*. San Francisco, California: Jossey Bass.
- Linden, R.M. 1990. *From Vision to Reality: Strategies of Successful Innovators in Government*. Charlottesville, VA: LEL Enterprises.
- Linden, R.M. 1994. <http://web.ebscohost.com/ehost/detail?vid=13&hid=2&sid=705388bb-2be8-4574-9eb3-d0c610396a10%40SRCSM1-bib18up#bib18up> Seamless Government: A Practical Guide to Reengineering in the Public Sector. San Francisco: Jossey-Bass.
- Lindquist, E. A. 1997. "The Bewildering Pace of Public Sector Reform in Canada." In Lane, J. (Ed.). *Public Sector Reform*. Thousand Oaks, California: Sage Publications: 47-63
- Long, J. S. 1997. *Regression Models for Categorical and Limited Dependent Variables*. Thousand Oaks, California: Sage.
- Long, J. S. and Freese, J. 2006. *Regression Models for Categorical Dependent Variables Using Stata*. Second Edition. College Station, Texas: Stata Press.
- March, J. G. and Olsen, J. P. 1989. *Rediscovering Institutions*. New York: Free Press.
- Meier, K. J. 2000. *Politics and the Bureaucracy: Policymaking in the Fourth Branch of Government*. Fourth Edition. Forth Worth: Harcourt College Publishers.
- Meier, K. J. & O'Toole, L. J. 2002. "Public Management and Organizational Performance: The Effect of Managerial Quality." *Journal of Policy Analysis and Management*, 21: 629-643.
- Meier, K. J. & O'Toole, L. J. 2003. "Public Management and Educational Performance: The Impact of Managerial Networking." *Public Administration Review*. 63: 689-699.

- Meyer, A. D. and Goes, J. B. 1988. "Organizational Assimilations and Innovation: A Multilevel Contextual Analysis." *Academy of Management Journal*, 31: 897- 923.
- Meyer, J. W. & Rowan, B. 1977. "Institutionalized Organizations: Formal Structure as Myth and Ceremony." *American Journal of Sociology*, 83: 340-363.
- Meyer, M. W. 1979. *Change in public bureaucracies*. Cambridge, MA: Cambridge University Press.
- Mohr, L. B. 1969. "Determinants of Innovation in Organizations." *American Political Science Review*, 63: 111-126.
- Peters, B. G. & Hogwood, B. W. 1988. "The Death of Immortality: Birth, Deaths, and Metamorphoses in the U.S. Federal Bureaucracy, 1933-1982." *American Review of Public Administration*, 18: 119-133.
- Pfeffer, J. & Salancik, G. R. 1978. *The External Control of Organizations*. New York: Harper & Row.
- Pierce, J. L. and Delbecq, A. L. 1977. "Organization Structure, Individual Attitudes and Innovation." *Academy of Management Review*, 2: 27-37.
- Poister, T. H. and Streib, G. 1999. "Performance Measurement in Municipal Government: Assessing the State of the Practice." *Public Administration Review*, 59: 325-335.
- Pollitt, C. 1990. *Managerialism and the Public Services*. Oxford: Blackwell.
- Pollitt, C. 1995. "Justification by Works of Faith." *Evaluation*, 1: 133-154.
- Pollitt, C. 2001. "Convergence: The Useful Myth." *Public Administration* (London), 79: 933-947.
- Pollitt, C. and Bouckaert, G. 2000. *Public Management Reform*. Oxford: Oxford University Press.
- Powell, W. W. & DiMaggio, P. J. (Eds.) 1991. *The New Institutionalism in Organizational Analysis*. Chicago, Illinois: University of Chicago Press.
- Quinn, R. E. and Cameron, K. 1983. "Organizational Life Cycles and Shifting Criteria of Effectiveness: Some Preliminary Evidence." *Management Science*, 29: 33-51.
- Rainey, H. G. 1999. "Using Comparisons of Public and Private Organizations to assess Innovative Attitudes among Members of the Organization." *Public Productivity and Management Review*, 23: 130-49.
- Rainey, H. G. 2003. *Understanding and Managing Public Organizations*. Third Edition. San Francisco, California: Jossey-Bass.
- Rainey, H. G. and Wise, L. R. 1999. "Public Management Change and Reform: General Issues and National Variations ." *Public Productivity and Management Review*, 23: 122-129.
- Rogers, E. M. 2005. *Diffusion of Innovations*. Fifth Edition. New York: Free Press.
- Rosner, M. M. 1968. "Economic Determinants of Organizational Innovation." *Administrative Science Quarterly*, 12: 614-625.
- Scott, W. R. 2003. *Organizations: Rational, Natural, and Open Systems*. Fifth Edition. Upper Saddle River, New Jersey: Prentice Hall.
- Scott, W. R. 2001. *Institutions and Organizations*. Second Edition. Thousand Oaks, California: Sage.
- Simon, H. A. 1997. *Administrative Behavior*. Fourth Edition. New York: The Free Press.
- Stillman, R. J. 1999. *Preface to Public administration: A Search for Themes and Direction*. Second Edition. Burke, VA: Chatelaine Press.
- Thompson, J. D. 1967. *Organizations in Action*. New York: McGraw-Hill.
- Treviño, M. 2006. "Texas School Trustee Wants to Hire Illegal Immigrants to Teach Bilingual Classes." *Latina Lista*, February 7, 2006.  
<http://latinalista.com/2006/02/texas-school-trustee-to-hire.html>. Accessed 2/9/2007.

- United States Department of Homeland Security. 2003. "Characteristics of Specialty Occupation Workers (H-1B) Fiscal Year 2002. <http://www.uscis.gov/files/article/FY2002Charact.pdf>
- Wiersema M. F. and K. A. Bantel 1992. "Top Management Team Demography and Corporate Strategic Change." *The Academy of Management Journal*, 35, 1: 91-121.
- Wilson, J. Q. 1989. *Bureaucracy: What Government Agencies Do and Why They Do It*. New York: Basic Books.
- Wise, L. R. 1999. "The Use of Innovative Practices in the Public and Private Sectors: The Role of Organizational and Individual Factors." *Public Productivity and Management Review*, 23: 150-68.
- Wise, L. R. 2002. "Public Management Reform: Competing Drivers of Change." *Public Administration Review*, 62: 543-554.
- Yukl, G., Gordon, A. and Taber, T. (2002). "A Hierarchical Taxonomy of Leadership Behavior: Integrating a Half Century of Behavior Research." *Journal of Leadership and Organizational Studies*, 9: 15-32.
- Zazona.com. 2003. "Texas Hires H1-B School Teachers." <http://www.zazona.com/newsarchive/2003%2011-29%20Texas%20Hires%20H-1B%20Schoolteachers.txt>. Accessed 2/9/2007.
- Zucker, L. G. 1987. "Institutional Theories of Organizations." *Annual Review of Sociology*, 13: 443-464.
- Zaltman, G. and R. Duncan and J. Holbek. 1973. *Innovations and Organizations*. John Wiley & Sons. New York.

Table 1. Descriptive Statistics

	Min.	Max.	Mean	Std. Dev.
Total staff fte	8	8,971	476.39	1,080.84
Total teachers fte	3	4,416	243.41	548.18
Total enrollment	23	77,956	3,665.26	8,772.19
Total revenues	353,663	415,000,000	20,797,056.15	49,509,070.70
Percent expenditures on central administration	3	23	7.25	2.64
Percent staff in central administration	0	14	1.79	1.44
Percent surplus funds balance at end of fiscal year	0	182	31.45	23.04
Leader sees role as change agent	1	4	3.25	0.68
Leader tenure	0	38	8.20	6.64
Student-teacher ratio	4	29	12.85	2.54
Percent certified teachers	0	31	3.96	4.52
Teacher turnover rate	0	47	15.78	7.08
Percent students in special education	0	35	14.68	4.34
Percent students in bilingual education	0	61	5.91	9.15
Percent students in vocational education	0	64	22.48	10.20
Percent students in gifted classes	0	50	7.71	4.02
Interactions with state legislators	1	5	2.35	0.62
Interactions with officials from TEA	1	5	3.21	0.78
Revenues per pupil	3,049	19,396	6,538.01	1,872.15
Percent revenues from local sources	5	98	44.31	23.06

Table 2. Zinb Regression Model (dependent variable = number of H-1B visa applications)

Variable	Inflate	H-1B		
	Model	Factor	Model	Factor
	b-score	change	b-score	change
<i>Organizational Size and Complexity</i>				
Total staff fte	0.08*	1.07	-0.00	0.99
Total teachers fte	-0.81*	0.45	0.05*	1.01
Total revenues	0.00	1.00	0.00	1.00
Total enrollment	0.01	1.01	-0.00	1.00
<i>Administrative Component</i>				
Percent expenditure on central administration	-22.79*	0.95	-0.29*	0.75
Percent of staff in central administration	20.81*	1.01	-0.35	0.71
<i>Slack Resources</i>				
Percent surplus fund balance	-0.02*	1.00	-0.03**	0.97
<i>Leadership</i>				
See my role as change agent	-50.97*	3.19	-0.26	0.77
Time in current job	1.16	0.00	0.03	1.03
<i>Task Environment</i>				
Student teacher ratio	-20.98*	0.01	0.20**	1.23
Percent of teachers not certified	-0.87	0.42	0.05	1.05
Teacher turnover rate	1.96	7.15	0.09**	1.10
Percent students in special education	-19.12*	0.01	-0.31**	0.73
Percent students in bilingual programs	-12.41*	0.22	0.03*	1.03
Percent students in vocational education	-1.50*	4.16	-0.01	0.99
Percent students in gifted classes	6.03*	1.10	0.04	1.03
<i>Institutional Environment</i>				
Networking with state legislators	21.30*	1.77	0.38	1.47
Networking with TEA officials	49.60*	3.46	0.59	1.66
<i>Control Variables</i>				
Revenues per pupil	-0.02*	0.98	-0.00	0.99
Percent revenues from local sources	1.54*	4.68	0.01	1.01
Constant				
Number of obs = 532 (69 zero, 463 nonzero)				
LR chi2(20) = 96.5 ( $p < 0.00$ )				
Log likelihood = -261.626				

$p < 0.01$  \*\*  $p < 0.05$  \*

Note: In the inflate model, the factor change coefficients represent the change in the odds of being in the group that did not apply for an H-1B visa for every one unit increase in the independent variable. In the H-1B model, the factor change coefficients represent the change in the expected count of H-1B visa applications for every one-unit increase in the independent variable.