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Predictors of Administrative and Technological Innovations in Nonprofit Organizations

Focus on Seminal Nonprofit Management Issues

This study examines the effects of human and structural/process factors on two types of innovation—administrative and technological—in a sample of nonprofit organizations. The results indicate that factors that are favorable to administrative innovations differ from those that are conducive to technological innovation. Three variables are significant predictors of administrative innovation: centralization, transformational leadership, and the executive director’s job tenure. Transformational leadership contributes significantly to the model of technological innovation. Based on the results of this study, the author provides implications for nonprofit management and future research.

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While the literature on innovation is extensive in the business sector, much work remains to be done in the nonprofit and government sectors. Walker noted that “little information exists about the extent of innova-

tion in public service organizations, beyond occasional sectoral or country studies” (2003, 102). Jaskyte and Dressler (2005) similarly suggested that nonprofit practitioners and scholars are faced with a gap in knowledge about innovations. According to Light, “the nonprofit and government innovation literature has traditionally been much

more concerned with the single act of innovation than with the organizational settings in which those acts take place” (1998, 8). Only a handful of studies have sought to identify the predictors of innovation and tested innovation models in government and nonprofit organizations (Jaskyte and Dressler 2005; Schin and McClomb 1998; Walker 2006).

Because the majority of studies have been based largely on data from business organizations, innovation models developed there may not easily be carried over into the world of nonprofits. Nonprofit organizations face unique challenges that can make innovation endeavors more difficult. Among those challenges are the unique attributes of nonprofit organizations, such as dealing with ethical issues in serving clients, working on or with people, difficulties in establishing criteria for success, fear of media exposure of failure, and dependence on external funding (Jaskyte 2009). Additionally, responsibility to supporters (foundations, individual donors, government) and accountability for failure influence nonprofit organizations’ decision-making processes when faced with opportunities (Hull and Lio 2006).

The adoption of innovations in organizations is complex and varies according to the type of innovation, whether it is administrative, technological, or process. Scholars have found that different types of innovations are not affected by or related equally to the same variables (Damanpour 1988; Jaskyte and Kisieliene 2006; Subramanian and Nilakanta 1996). The factors associated with innovation occur at individual, organizational, and environmental levels and influence the adoption of various types of innovations differently. Before initiating an innovation process within an organization, it is essential to understand the types of innovation and the factors related to each type (Damanpour 1988).

The majority of studies on innovation have focused primarily on business organizations and assessed the correlates of overall organizational innovativeness. Not much is known about whether different variables have different influences depending on the type of innovation (Kimberly and Evanisko 1981). To better understand innovation adoption behavior and to be able to develop theories of innovation, it is necessary to differentiate between the different types

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Despite those challenges, nonprofits have been at the forefront of introducing innovative programming. In fact, some authors suggest that innovation is an essential characteristic of nonprofit organizations. Salamon, Hems, and Chinnock (2000) noted that nonprofit organizations are more flexible and adaptable than other organizations because they are not driven by the “bottom line.” Current events suggest that the U.S. government recognizes the creative potential of nonprofit organizations. In a 2009 speech, President Barack Obama recognized the central role of nonprofit organizations in addressing current-day challenges. He stressed the importance of seeking out creative and results-oriented programs, highlighted innovative programs across the country, and praised them for their risk taking and willingness to fail and try again.

In summary, innovation is and will be critical not only for nonprofit organizations’ long-term success and survival, but also for addressing numerous issues. Therefore, in order for nonprofit organizations to become more innovative, their managers need a better understanding of how to encourage innovation, as well as how to create organizational environments that support it. The study reported here examines the relationships between seven variables that are thought to affect two types of innovation—administrative and technological. The study focuses on the nonprofit sector—specifically, human service nonprofit organizations, which constitute the largest subsector of all public charities (34.5 percent; see Urban Institute 2007). In contrast to recent innovation studies that focused primarily on structural and process factors and their relationship to the overall innovation, in this study, two human factors—leadership and organizational culture—are seen as central for understanding different types of innovations.

Literature Review

Types of Innovation

A variety of different innovation typologies exist in organizational literature—radical/incremental, borrowed/original, expansionary/evolutionary/developmental, product, process, and administrative. However, the distinction between technological and administrative innovation prevails as one of the most meaningful innovation dichotomies (Han, Kim, and Srivastava 1998). The present study focuses on those two types of innovations because they are believed to be of primary importance for the effectiveness of nonprofit organizations. These two types of innovations are related to different systems of an organization—the social and the technical—and they are usually initiated in different parts of the organization (Daft 1978).

Administrative innovations are introduced in the administrative core and tend to be implemented from the top down. They pertain to organizational structure, administrative systems, and human resources (Damanpour, Szabat, and Evan 1989). Administrative innovations involve procedures, rules, roles, and structures that are related to the communication and exchanges among employees, and they are more directly related to organizational management rather than directly to work activities. Administrative innovation in this study is defined as the implementation of a structure, procedure,

system, or process in the administrative core of an organization that is new to the prevailing organizational practices. An example of an administrative innovation is the creation of strategy teams composed of staff and board members that are responsible for addressing a variety of different issue areas identified during a strategic planning meeting.

Technological innovation “can be the adoption of a new idea pertaining to a new product or service, or the introduction of new elements in an organization’s production process or service operations” (Damanpour, Szabat, and Evan 1989, 588). Technological innovations are related to work activities, have a market focus, and are client driven. Technological innovation in this study is defined as the implementation of a service, program, or product that is new to the prevailing organizational practice. An example of a technological innovation is a Performance Learning Center (PLC), a nontraditional high school program geared toward students who have dropped out of high school, are not succeeding in a traditional high school setting, or need a flexible scheduling option. The PLC’s businesslike environment challenges students to complete assignments at their own pace using an online computer-based curriculum.

While the innovation literature is multidimensional (innovations at the individual, team, and organizational levels have been assessed), and while researchers have explored individual, organizational, and external factors contributing to innovations across different levels, this study focuses solely on organizational-level innovation and related organizational factors.

Predictors of Administrative and Technological Innovations

Theories and models of innovation have focused predominantly on overall innovation, and the majority of innovation studies have assessed the correlates of overall organizational innovativeness. Research on various factors that influence different types of innovations is fragmented, ambiguous, and contradictory (Subramanian and Nilakanta 1996). The present study seeks to fill in this gap by examining the effects of organizational variables on administrative and technological innovations. Based on this literature review, seven factors expected to promote the adoption of two different types of innovations were identified and included in the model: centralization, formalization, specialization, size, transformational leadership, executive director’s tenure, and organizational culture (see figure 1). Discussion of the expected relationships among technological and administrative innovations and each of those factors follows.

Structural and process factors. The majority of innovation studies have been cross-sectional in design and have looked at the correlations between *overall levels of innovation* and large numbers of organizational structural and process characteristics (Damanpour 1987; Kimberly and Evanisko 1981; Wolfe 1994). The variables most often employed in innovation studies include formalization, centralization, professionalization, specialization, organizational size and resources, slack, complexity, administrative intensity, external communication, internal communication, and vertical

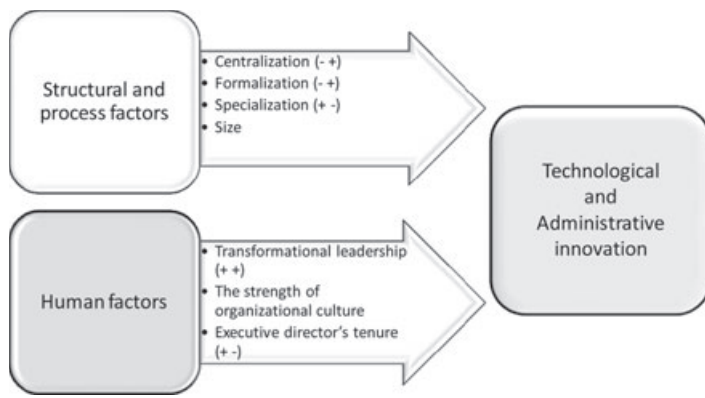


Figure 1 Model Underlying the Study

Note: Signs in parentheses denote the direction of the relationship between each factor and technological and administrative innovation.

differentiation (Damanpour 1996; Kimberly and Evanisko 1981; Meyer and Goes 1988).

What are the structural and process characteristics that support innovation in nonprofit organizations? Dart (2004) noted that while basic characterizations of nonprofit organizations focus on a set of social and volunteer values, the means and structures that help enact those values are rarely mentioned. These factors are critical to explore because institutional arrangements and processes provide support for the missions of nonprofit organizations. In this study, two process factors—centralization and formalization—and two structural factors—specialization and size—are believed to be related to technological and administrative innovations.

Centralization of decision-making power is believed to have differential effects on technological and administrative innovations. Technical innovations are more frequently adopted in decentralized authority structures, while administrative innovations are more often implemented in centralized structures (Daft 1982; Kimberly and Evanisko 1981). The structural flexibility and dispersion of power within a decentralized authority structure can contribute to technological innovation because it allows for networking and sharing of information, thus increasing support for innovation within the organization (Damanpour 1996). Low centralization also allows for cross-fertilization of ideas and the promotion of proposals for innovation. Finally, by creating a participatory environment, the organization sends a message to its employees that their input is valued and welcomed, which may, in turn, facilitate innovation (Damanpour 1992).

In highly centralized organizations in which power is concentrated in the hands of the administrative core and more control is exercised over employees, administrative innovations are thought to be adopted more promptly than technical innovation (Damanpour 1996). Some empirical evidence exists to support those theoretical arguments. Kimberly and Evanisko (1981) concluded that centralization was negatively related to technological innovation and unrelated to administrative innovation. Subramanian and Nilakanta (1996) obtained similar results in their study: the degree of centralization was negatively related to the number of technological innovations

adopted, and high degrees of centralization were positively related to early and consistent adoption of administrative innovations. Schin and McClomb (1998), in their study of innovations (administrative, product, and process), found that centralization was negatively related to innovation. It is thus hypothesized that,

H_{1a}: Centralization is negatively related to technological innovation.

H_{1b}: Centralization is positively related to administrative innovation.

Formalization, or the degree to which an organization emphasizes rules and regulations, is believed to inhibit technological innovation by suppressing creativity and by inhibiting communication and diffusion of ideas (Burns and Stalker 1961; Hage and Aiken 1970). Damanpour (1996) proposed that informal structures allow conflict and offer employees more flexibility in their roles. This fosters innovation by increasing organizational members' freedom to handle decisions and work processes. Additionally, formalization is negatively related to technological innovation because of its emphasis on rigidity and authority, which discourages creative problem solving and introduction of new ideas (Daft 1982; Damanpour 1996). Such innovations are more likely to be adopted in informal structures. However, formalization is believed to be positively related to administrative innovation because of the focus on rules and management (Daft 1982). In highly formalized organizations in which rules and regulations are followed, upper management has more control over employees, which makes the introduction of administrative innovations easier. It is hypothesized that,

H_{2a}: Formalization is negatively related to technological innovation.

H_{2b}: Formalization is positively related to administrative innovation.

Specialization, defined as the number of different classifications of personnel within the organization, is believed to be more strongly associated with technological innovations than with administrative ones. Some authors suggest that a greater variety of personnel classifications in an organization creates a broader technological knowledge base, which, in turn, can be used to produce technological innovations (Daft 1978; Kimberly and Evanisko 1981). Additionally, high specialization also means the availability of diverse perspectives and kinds of information needed for innovation.

Specialization is also believed to be positively related to administrative innovations because a high number of specialists is believed to generate more complex coordination and control issues, which may require innovative administrative solutions (Aiken, Bacharach, and French 1980). Additionally, having diverse personnel calls for more varied performance evaluation, employee recognition, and training tools, all of which constitute examples of administrative innovations. While the empirical evidence for this relationship is limited, it does provide some preliminary support for these theoretical propositions. Kimberly and Evanisko (1981) found that hospitals that introduced high numbers of technological innovations tended to be highly specialized; specialization was not a significant predictor

of administrative innovations. Daft (1978) found that organizations with high degrees of specialization introduced a larger number of technical innovations. Organizations with low specialization, on the other hand, facilitated the top-down process of administrative innovation. Subramanian and Nilakanta (1996) similarly found that there was a negative relationship between the degree of specialization and administrative innovation and a positive relationship between specialization and technological innovation. Thus, it is hypothesized that,

H_{3a}: Specialization is positively related to technological innovation.

H_{3b}: Specialization is negatively related to administrative innovation.

Theoretical arguments and research findings regarding the relationship between innovation and organizational size are mixed (Damanpour 2001). While some authors suggest that large organizations have more slack resources, greater control over the environment, and wider opportunities for employee development, growth, and promotion, others argue that such organizations tend to be more bureaucratic, less flexible, and have high levels of inertia (Whetten 1987).

It has been suggested that size has a differential effect depending on the type of innovation. Subramanian and Nilakanta (1996) proposed that administrative innovations are more likely to be adopted in larger, more complex organizations. The introduction of administrative innovations is facilitated by the larger size of their administrative components. Large organizations also have more problems with control and coordination of their differentiated units, and by adopting administrative innovations, these issues may be resolved (Daft 1978). Kimberly and Evanisko (1981) similarly suggested that administrative innovations are adopted in response to problems of administrative control.

While agreement exists regarding the link between size and administrative innovations, scholars disagree about the relationship between technological innovations and size. Some believe that smaller and less complex organizations have the potential to introduce more technological innovations because they are more nimble and because they have greater flexibility to respond to changed circumstances (Damanpour 1996; Dougherty and Hardy 1996; Utterback and Abernathy 1975), while others suggest that large organizations introduce more technological innovations because of greater range of services required by the populations they serve and because of greater specialization.

Although some empirical evidence exists to support a relationship between size and administrative and technological innovation, it is inconclusive. Small organizations have been found to be more inventive than larger ones in producing new technological products (Sharma 2005). Fennell (1984) found that size increased the likelihood of introducing administrative innovations. Both administrative and technological innovations were positively associated with size in a study conducted by Daft (1978). Both types of innovations were also positively related to size in Kimberly and Evanisko's study of hospitals (1981). Subramanian and Nilakanta (1996) similarly

found that administrative innovations were positively related to size. Because of a lack of agreement among authors and mixed empirical results, it is hypothesized that,

H_{4a}: Size is related to technological innovations.

H_{4b}: Size is related to administrative innovation.

Human factors. While the majority of innovation studies have focused on structural variables as predictors of innovation, researchers increasingly are recognizing the role of human factors in influencing innovation. A number of theorists and researchers have argued that leadership is the most important factor affecting innovation (Hofstede et al. 1990; King 1990; Schin and McClomb 1998). Leaders are seen as critical in creating and supporting pro-innovation cultures (Hage and Dewar 1973), controlling the processes of monitoring the environment, creating policies to respond to external changes, influencing strategic decisions, and controlling organizational resources (Damanpour and Schneider 2006).

Leadership behaviors seen as most effective in fostering innovation include maintaining external legitimacy, obtaining resources, and facilitating adaptation and change (Quinn 1988). Van de Ven (1986) suggested that the supportive leadership style fosters innovation through supportive organizational strategies, systems, and structures.

Some authors have identified transformational leadership as the ideal style for promoting innovation (Bass 1985; Howell and Higgins 1990). This leadership type is seen as the most successful in implementing a pro-innovation culture and values within an organization. Transformational leadership has been defined as a process in which "leaders and followers raise one another to higher levels of morality and motivation" (Crawford 2005, 8). Jung, Chow, and Wu (2003) noted that transformational leaders provide an impetus that encourages followers to be creative and think of new ideas.

Few theoretical propositions and even fewer empirical works have addressed the relationship between leadership style and different types of innovations. Gabris, Golembiewski, and Ihrke (2000) discussed a link between administrative innovations and transformational leadership. According to them, transformational leaders foster good relationships with their boards that are characterized by trust, openness, higher ownership, and lower risk. The resulting dynamics, in turn, facilitate acceptance of administrative innovations. Damanpour and Schneider (2006) similarly suggested that leaders who support an entrepreneurial spirit create administrative processes and organizational structures that encourage innovation.

Likewise, the employee-leader relationships created by transformational leaders should be conducive to technological innovations. Employees who have a transformational leader who motivates them to pursue goals that they may not otherwise have attempted encourages the need for innovation and conveys the means to achieve that change will be willing to come up with innovative ideas for new services, programs, or products. A leader who shows individualized consideration for his or her employees and provides inspiration and intellectual stimulation for them will provide a fertile ground for bottom-up or technological innovation.

Despite numerous theoretical propositions, few empirical investigations of the relationship between leadership style and innovation have been conducted (Schin and McClomb 1998; Waldman and Bass 1991). In their study of top executive leadership and innovation in nonprofit human service organizations, Schin and McClomb (1998) found that innovation was the highest in organizations that were headed by top executives with a “vision setter” style of leadership. Behaviors characterizing this style include searching for innovations and potential influence, studying emerging social and economic trends, and experimenting with new procedures and concepts.

Pierson (1994) found that the executive directors of innovative organizations had certain traits: macro perspective, looks ahead to the future, compassion for people, risk taker, works very hard, creative or appreciates creativity, flexibility, appreciate staff, and can give up power. Additionally, Howell and Higgins (1990) found that the executive leadership behaviors that promote innovation include the provision of job autonomy and diverse career experiences for employees, innovative project sponsorship, the pursuit of unconventional action plans, the provision of visible recognition for creative ideas, and a commitment to vision-supporting innovation. In her study of 25 nonprofit organizations, Jaskyte (2004) found no relationship between transformational leadership and innovation. Jaskyte and Kisieliene (2006) found that there was no relationship between transformational leadership and administrative and technological innovations. In their interpretation of the results, the authors noted the possibility that organizational culture serves as a mediator between leadership and innovation.

In line with the existing theoretical propositions and empirical evidence that supports a positive relationship between overall innovation and transformational leadership, it is hypothesized that,

H_{5a}: Transformational leadership practices are positively related to technological innovation.

H_{5b}: Transformational leadership practices are positively related to administrative innovation.

Yet another variable that is believed to be related to organizational innovation is the job tenure of the executive director. Some authors argue that there is a positive relationship between the two variables (Rogers and Shoemaker 1971): the executive leader’s experience on the job is directly related to his or her established reputation and ability to function effectively in the political arena, which should contribute to his or her ability to introduce innovations. Kimberly and Evanisko (1981) argue for a negative relationship, suggesting that new executive directors bring in new ideas, energies, and perspectives to their organizations. While no theoretical propositions exist regarding the tenure of an executive director and different types of innovations, some plausible explanations are in order. If administrative innovations are in fact top-down innovations, it makes sense that a new executive director would have new ideas related to the internal management of an organization, which would result in administrative innovations. An experienced executive leader with an established reputation in the community, on the other hand, should be able to function well in the political arena and attract more resources needed for technological innovations. It is hypothesized that,

H_{6a}: The job tenure of the executive director is positively related to technological innovation.

H_{6b}: The job tenure of the executive director is negatively related to administrative innovation.

Organizational culture is another human variable that has received substantial attention in the organizational literature. When studying the relationship between innovation and organizational culture, scholars have focused on the relationship between the strength of the culture and innovation. A number of authors believe that organizations with strong cultures are more likely to produce innovations (Peters and Waterman 1982). Homogeneity of organizational values was seen as essential for becoming an excellent company.

However, other authors who recognize the heterogeneous nature of organizational culture have argued that strong cultures are problematic for innovations. They maintain that organizations with strong cultures might have difficulty implementing new ways of functioning, responding to changes in the external environment, and generating new solutions to problems that arise (Nemeth 1997; Trice 1993). Collins and Porras (1994) noted that innovation requires an organizational culture that is entirely the opposite of a strong and predictable culture, which emphasizes adherence to organizational expectations. One must feel free to deviate from organizational expectations, to “think outside the box,” and to challenge existing ways of doing things in the organization.

Unfortunately, empirical support for the link between the strength of organizational culture and innovation is limited. Jaskyte and Dressler (2005) found that cultural consensus, or the strength of organizational culture, was inversely related to organizational innovation, suggesting that strong cultures inhibit innovation. In yet another study, the strength of organizational culture was not related to administrative or technological innovations (Jaskyte and Kisieliene 2006). In line with the reviewed literature, it is hypothesized that,

H_{7a}: The strength of organizational culture is related to technological innovation.

H_{7b}: The strength of organizational culture is related to administrative innovation.

Methodology

Sample and Procedures

This research was conducted in partnership with a large network of nonprofit organizations, Communities in Schools, that focuses on bringing community resources into schools to help young people successfully learn, stay in school, and prepare for life. Communities in Schools is a national network of 200 local affiliates and 27 state offices.

In all, 79 local affiliates and state offices in four states—Florida, Georgia, North Carolina, and South Carolina—participated in this study. While all of these organizations belong to the same network, their programs are independently designed based on local needs and resources, and hence the organizations vary greatly in their programming and focus. Each has local control and is locally defined. The study sample included employees, executive directors, and board

members of participating organizations. Data are reported from 980 respondents in 79 organizations (Florida, 9; Georgia, 34; North Carolina, 24; South Carolina, 12). The author visited a total of 102 organizations, and after numerous follow-up calls and reminder cards, satisfactory responses were obtained for 79 of them. Response rates within individual organizations ranged from 12.12 percent to 100 percent. The mean response rate was 43.5 percent, with a median of 38.1 percent and a mode of 25 percent. Considering the fact that in the nonprofit sector, return rates are limited when the subject matter concerns an organization rather than an individual (25 percent to 50 percent are not atypical for organizational surveys) (Hager et al. 2003), the response rates for this study were deemed acceptable.

To collect data on administrative and technological innovations, the author conducted face-to-face interviews with each of the executive directors. Prior to the interview, each director received an Organizational Innovativeness Questionnaire (Jaskyte 2002). During the interview, the directors were asked to report whether one or more innovations had been attempted in a particular area and then to describe them. In addition to indicating the number of administrative and technological innovations, the executive directors provided information about the organization's size and specialization and the executive director's tenure. While on site, the author left packets with questionnaires for all employees and board members that included measures of organizational culture, leadership, formalization, centralization, and demographic questions. Internal consistency reliability estimates for all measures used in the study are provided in table 1 as diagonal elements.

Measures

Administrative and technological innovations. Administrative and technological innovations were measured using the Organizational Innovativeness Questionnaire (Jaskyte 2002). Four items from this questionnaire were used to assess administrative innovation: the creation of a new performance evaluation system, the creation of a new employee/volunteer incentive/reward system, the creation of a new recruitment system, and the creation of a new organizational structure or shape. Five items in the Organizational Innovativeness Questionnaire assessed technological innovations. Those items were the introduction of new services/programs, significant change in already existing services/programs, the extension of services to new groups of clients previously not served by the organization, the production of a new product, and the introduction of a new activity/event for clients/employees/volunteers. The extent of adoption of administrative and technological innovations was operationally defined as the sum of the number of innovations adopted as reported by an executive director.

Centralization. Centralization was defined as the degree to which employees participated in decision making concerning important organizational policies and procedures. The three-item measure developed by Hage and Dewar (1973) was used to measure centralization (see the appendix for the items of this measure).

Formalization. Formalization was defined as the extent to which emphasis was placed on organizational rules and procedures. The five-item measure, also adopted from Hage and Dewar (1973), was used to measure formalization (see the appendix for the items of this measure).

Specialization. Specialization was measured by the total number of job classifications of personnel in an organization.

Size. Organizational size was operationalized as the total number of full-time and part-time employees. To be consistent with previous research practice, the log of the total number of employees was used as a measure of size (Kimberly and Evanisko 1981).

Transformational leadership. Transformational leadership was defined as a set of practices employed for developing relationships between leaders and employees. It was measured using the Leadership Practices Inventory (LPI) (Kouzes and Posner 1993). All employees were asked to rate a set of 30 behaviorally based statements regarding five leadership practices: challenging the process, inspiring a shared vision, enabling others to act, modeling the way, and encouraging the heart. Responses for each behaviorally based statement were measured on a five-point Likert scale. Posner and Kouzes (1993) reported that the LPI has sound psychometric properties. Internal reliabilities with 36,226 subjects ranged from .81 to .90.

Organizational culture. Organizational culture in this study was defined as a set of shared values that help organizational members understand organizational functioning and thus guide their thinking and behavior (Desphande and Webster 1989). It was measured using the Organizational Culture Profile (OCP) developed by O'Reilly, Chatman, and Caldwell (1991). The instrument contains 54 value statements, 23 of which factored alike in numerous studies forming the following value dimensions: attention to detail, innovation, outcome orientation, aggressiveness, team orientation, stability, and people orientation (Chatman and Jehn 1994; O'Reilly, Chatman, and Caldwell 1991; Sheridan 1992). Those 23 value statements were used to measure this variable (see the appendix for the items of this measure).

The OCP shows reasonable reliability and convergent validity. The instrument has demonstrated moderate test-retest reliability (median $r = .74$, range = .65–.87). The cultural consensus analysis routine in the ANTHROPAC program (Borgatti 1992) was used to estimate the strength of organizational culture, or cultural consensus.

Data Aggregation and Results

Because conceptual and operational definitions of the major variables of the study pertain to an organization, the aggregate estimates for those variables (formalization, centralization, transformational leadership, and organizational culture) were obtained for each of the participating organizations first. Upon completion of 79 separate analyses, a new data set was created in which the aggregate estimates of formalization, centralization, cultural consensus, and leadership and the rest of organizational variables—size and specialization—were included along with the estimates of administrative and technological innovations.

Organizational age ranged from 2 to 32 years, with a mean age of 10.42 years, a median of 10, and a standard deviation of 6.13. The number of full-time employees ranged from zero to 64, with a median of 7.08 and a standard deviation of 10.37. The number of part-time employees ranged from 1 to 43, with a median of 2 and a

standard deviation of 7.56. The organizations had a mean of 5.38 job classifications, with a minimum of zero and a maximum of 28. The average executive director's tenure of working for the organization was 6.38, with a minimum of 1 year and a maximum of 30 years.

Organizations introduced more technological (mean = 10.51) than administrative innovations (mean = 5.94). Within technological innovations, the most prevalent innovations were the introduction of new services/programs (mean = 3.06) and the introduction of a new activity/event for clients/employees/volunteers (mean = 2.15). The introduction of a new employee/volunteer incentive/reward system (mean = 1.22) and the creation of a new organizational structure or shape (1.03) were the most frequently implemented administrative innovations. Table 1 shows bivariate relationships between administrative and technological innovations and the independent variables.

To test the research hypotheses, two separate hierarchical regression models were constructed for the two types of innovations in order to assess the contribution of two sets of variables—structural/process and human—in explaining administrative and technological innovations. The structural and process variables were entered into the equation first, followed by the human factors. Although the independent variables were intercorrelated, fairly high tolerance values ranging from .587 to .927 and low variance inflation values ranging from 1.065 to 2.315 indicated that multicollinearity was

not an issue. Table 2 shows that hypotheses H1b, H5a, H5b, and H6b are supported.

The results show that all of the independent variables taken together explained the two types of innovations differently. The percentage of variation in administrative and technological innovations explained by their relationship to independent variables was 27 and 23, respectively. Three variables were significant predictors of administrative innovation—centralization, transformational leadership, and the executive director's tenure. Transformational leadership contributed significantly to the model of technological innovation.

Discussion and Implications for Practice

The purpose of this study was to assess technological and administrative innovations in nonprofit organizations and to identify factors that are associated with two types of innovations. The results show that nonprofit organizations introduced more technological than administrative innovations. Specifically, participating nonprofit organizations introduced new programs and services as well as new activities/events for clients/volunteers/employees. This finding supports the argument that nonprofit organizations respond to issues by formulating and implementing new services and programs, suggesting that they can serve as a source of innovation in problem solving. Additionally, the results of this study suggest that factors favorable to administrative innovations differ from those that are conducive

Table 1 Correlation Matrix ($N = 66-79$)

Variable	1	2	3	4	5	6	7	8
1. Administrative innovation	.66							
2. Technological innovation	.432*	.54						
3. Formalization ^a	-.038	.074	.83					
4. Centralization ^b	-.204	-.021	-.125	.80				
5. Specialization	.315*	.331*	.015	-.355*	—			
6. Size	.298*	.367*	.043	-.347*	.718*	—		
7. Strength of organizational culture	-.084	-.016	.017	.200	-.184	-.151	—	
8. Leadership	-.030	.014	-.097	.542*	-.433*	-.369*	.217	.96
9. Executive director's tenure	-.125	-.169	.163	-.189	.086	.200	-.064	.025
Mean	5.94	10.51	2.18	3.45	5.38	12.22	.54	4.27
SD	4.52	5.61	.34	.54	3.98	17.05	.11	.36
Min	0	1	1	2.14	1	1	.08	3.28
Max	21	30	2.83	4.60	28	112	.75	4.93

a. High formalization values indicate high formalization.

b. High centralization values indicate low centralization (decentralization).

* $p < .01$.

Table 2 Regression of Administrative and Technological Innovations on Structural, Process, and Human Variables ($n = 79$) (standardized regression coefficients, with standard errors in parentheses)

Variable	Administrative Innovation		Technological Innovation	
	Model 1	Model 2	Model 1	Model 2
Formalization ^a	-.088 (.705)	-.019 (.678)	.032 (1.223)	.067 (1.232)
Centralization ^b	-.086 (.492)	-.296 (.537)*	.140 (.853)	-.032 (.975)
Specialization	.178 (1.513)	.279 (1.464)	.209 (2.625)	.293 (2.658)
Size	.149 (.938)	.164 (.883)	.251 (1.628)	.264 (1.603)
Cultural consensus		.046 (2.702)		.015 (4.907)
Transformational leadership		.342 (.710)*		.314 (1.290)*
Executive director's tenure		-.341 (.074)**		-.179 (.135)
R	.354	.521	.397	.481
R^2	.125	.271**	.158*	.231*
Adjusted R^2	.072	.189	.106	.145

a. High formalization values indicate high formalization.

b. High centralization values indicate low centralization (decentralization).

* $p < .05$; ** $p < .01$.

to technological innovations. While structural, process, and human factors were significant predictors of administrative innovations, only one human factor—transformational leadership—was a significant predictor of technological innovation.

The positive relationship found between administrative innovation and transformational leadership suggests that organizations that have executive directors who employ transformational leadership practices also tend to introduce more administrative innovations. This finding is consistent with the theoretical proposition that administrative innovations are top-down innovations. Transformational leaders have been defined as future oriented, open-minded, dynamic, and concerned about planning, uniting employees, encouraging them to adopt the leader's vision as their own and to make it become a reality (Bryman 1992; Harris 1985). They expect their employees to think beyond themselves and to become high performers and leaders (Bass 1985). The introduction of such administrative innovations as a new employee/volunteer incentive/reward system, a new recruitment system, a new performance evaluation system, or a new organizational structure may have contributed to building a more competent and motivated administrative core that supports the aspirations of transformational leaders. For example, introducing a new reward and incentive system should motivate employees to become better performers.

While no causal inferences can be drawn because of the design of the study, two alternative explanations are offered for the observed positive relationship between transformational leadership and technological innovation. First, although technological innovations are believed to be bottom-up innovations, it is possible that leaders themselves can be the primary driving forces that introduce new programs/initiate new activities by being entrepreneurial. Yet another alternative explanation is that this particular leadership style can facilitate bottom-up innovation. Transformational leaders use individualized consideration, inspiration, and intellectual stimulation to stimulate creativity and enhance employees' capacity to innovate (Bryman 1992). Because technological innovations are developed primarily from the bottom up and are introduced in the technical core, it is critical to stimulate employee creativity, which is the starting point for any innovation.

Centralization was positively related to administrative innovation, which suggests that centralized power and higher levels of control over employees might be more conducive to administrative innovations than decentralized power. Finally, a negative relationship between administrative innovation and executive director's tenure supports the author's earlier proposition that a new executive director might have new ideas related to internal management of an organization, which would result in administrative innovations.

The results of this study have important practice implications. These recommendations, however, should be considered with

caution because this study did not include any effectiveness measures, and therefore it is not known how levels of administrative and technological innovations contributed to an organization's overall performance and effectiveness. Because transformational leadership practices were positively related to administrative (top-down) and technological (bottom-up) innovations, the adoption of those practices may lead to increased innovations in the administrative core. Those practices include the following: challenge familiar organizational processes, inspire a shared vision among employees, enable employees to act in accordance to their vision, model the way for employees to perform, and encourage them through recognition and celebration of success. Additionally, because transformational leadership was a significant predictor of both administrative and technological innovations, the providers of leadership training opportunities for executive directors of nonprofit organizations, which are becoming increasingly popular, should consider including the topics of transformational leadership and innovation in their training curricula.

A negative relationship between administrative innovation and executive director's tenure suggests that the executive directors who have been in their positions for a number of years may want to reevaluate the internal processes, rules, policies, and structures of their organizations. If left unquestioned, assumptions and practices pertaining to the internal management can become outdated and can impede the progress.

Finally, keeping power centralized in the hands of upper administration appears to be conducive to the adoption of administrative innovations. Prompt introduction of such administrative innovations as a new performance evaluation system, a new employee/volunteer incentive/reward system, a new recruitment system, and a new organizational shape/structure may require a more focused and decisive action on the upper management's behalf and less involvement of the frontline staff in those types of decisions.

Study Limitations and Future Studies

While this study found interesting and useful information about the predictors of administrative and technological innovations, it has a number of limitations. Because of the exploratory, cross-sectional nature of this study, no causal inferences can be drawn from the findings. In order to test theoretical propositions about the directions of those relationships, future research studies should use larger organizational samples and use more sophisticated statistical models. Longitudinal study designs would allow more objective and fuller investigation of those relationships and would allow assessment of relationships that are dynamic in nature. Finally, this study was conducted in one type of nonprofit human service organization. Future researchers should seek to assess whether the findings of this study would hold in different types of nonprofit organizations as well as in public and business organizations.

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Appendix: Survey Scales

Formalization

The following items were adopted from Hage and Dewar's (1973) measure of formalization and had this response format: 1 = "definitely true," 2 = "more often true than false," 3 = "more often false than true," 4 = "definitely false."

1. I feel like I am my boss in most matters.
2. A person can make his own decisions without checking with anybody else.
3. How things are done is left up to the person doing the work.
4. People here are allowed to do almost as they please.
5. Most people here make their own rules on the job.

Centralization

The following items were adopted from Hage and Dewar's measure of centralization and had this response format: 1 = "never," 2 = "seldom," 3 = "sometimes," 4 = "often," 5 = "always."

1. How often do you participate in evaluation of how well your organization performs its work?
2. How often do you participate in decisions on the adoption of new programs?
3. How frequently do you participate in decisions on adoption of new rules, policies, and procedures?

Organizational Culture

Organizational culture items were adopted from the Organizational Culture Profile developed by O'Reilly, Chatman, and Caldwell (1991). Respondents were asked to rate 23 organizational culture values according to how characteristic they were of their organization (5 = extremely characteristic, and 1 = extremely uncharacteristic).

1. Being people oriented
2. Respect for people
3. Being supportive
4. Being team oriented
5. Fairness
6. Sharing information freely
7. Being rule oriented
8. Being detail oriented
9. Being precise
10. Being analytical
11. Predictability
12. Competitiveness
13. Risk taking
14. Willing to experiment
15. Being action oriented
16. Working in collaboration with others
17. Being quick to take advantage of opportunities
18. Being results oriented
19. Being achievement oriented
20. Being innovative
21. Low level of conflict
22. Stability
23. Security

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