

**Impacts of Organizational Resources on Agency Performance:**

**Evidence from Federal Agencies**

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## **Impacts of Organizational Resources on Agency Performance: Evidence from Federal Agencies**

### **Abstract**

This study tests the relative impacts of various organizational resources (administrative, human, financial, physical, political, and reputation resources) on federal agencies' effectiveness through the Resource-Based View. According to the analysis result, a variety of resources show relatively different impacts on agency effectiveness: some resources have positive and significant influences on agency effectiveness and others have negative or insignificant relationships with agency performance. Resources such as number of members in top leadership, professional employees, presidential attention, and agency's public reputation have positive and significant relationships with agency effectiveness. This study provides useful strategic knowledge about resources to enhance federal agencies' performance.

## INTRODUCTION

Organizational performance has become central to the study of public administration and public management because it can be considered as the ultimate goal of organizations (Rainey 2003). In addition, currently, greater emphasis is placed on the performance of public agencies and programs, as reflected in the Government Performance and Results Act (GPRA) and the Performance Assessment and Rating Tool (PART), and in other ways. Yet we have few well-developed theories or frameworks to explain the performance of government agencies. Research on organizational performance (effectiveness)<sup>1</sup> is of two types: studies on the development of measurement criteria for effectiveness and studies that predict effectiveness using independent variables (Campbell 1977; Riccio, Bloom, and Hill 2000). The former ask what elements constitute organizational effectiveness; the latter ask what factors influence performance. This study attempts to fill one important gap in the literature on the study of modeling performance.

Scholars in public administration and public management have paid systematic attention to the study of the black box between resources (inputs) and results (outputs) (Ingraham and Donahue 2000). In other words, public management scholars have studied whether management matters in public administration and public management in transforming resources into results. In investigating this “traditional policy performance equation” (Ingraham and Donahue 2000, 295), however, scholars have paid relatively little formal attention to the role and importance of resources (inputs). One reason is that we usually assume that resources positively influence performance. Yet, we lack comprehensive empirical evidence about their different roles and impacts. Kettl and

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<sup>1</sup> According to Selden and Sowa (2004), “Scholars often use the terminology ‘effectiveness’ and ‘performance’ interchangeably to describe the same phenomenon, the overall ability of organizations to perform well or effectively pursue their missions” (396).

Fesler (2005) and Fernandez and Rainey (2006) note sufficient resources are essential for successful organizational change and performance, but we lack comprehensive empirical knowledge about the relative roles and importance of different resources in achieving organizational goals. Of course, scholars have included resources as a variable in general models of organizational performance (e.g., O'Toole and Meier 1999; Lynn, Heinrich, and Hill 2000; Meier and O'Toole 2001; Pitts 2005), but in these studies resources are usually treated as environmental factors or constraints rather than the main variables of interest. That is, most studies do not focus on the relative influence of different resources on organizational performance.

In contrast, traditional organization theorists consider resources as central to understanding performance. Schumpeter (1942) argues that rich organizations and industries in resources are better able to survive external, environmental turbulence. Simon (1947) and Thompson (1967) presume a direct relationship between resources and organizational performance. In the field of policy implementation, many scholars have thought that sufficient resources lead to the successful implementation of public policy (e.g., Montjoy and O' Toole 1979; Browne and Wildavsky 1983; Mazmanian and Sabatier 1989; Goggin, Bowman, Lester, and O'Toole 1990; Matland 1995). Several scholars in public management have emphasized the role and the importance of resources in achieving organizational goals. Rainey and Steinbauer (1999) hypothesize that agency effectiveness depends on the utilization of technological resources and the development of human resources. Holzer and Callahan (1998) also point out the importance of technology and human resources in government performance with detailed elaboration. Boyne (2003) argues that extra resources are one of five determinants (i.e., resources,

regulation, markets, organization, and management) of public service performance.

Boyne focuses on financial resources such as financial spending per capita or pupil, and on real resources such as quantity of staff or teachers.

Especially, in their *Public Administration Review* article, Bryson, Ackermann, and Eden (2007) have proposed that we need to develop applications of the Resource-Based View (RBV) for analysis of the performance of government organizations. They argue that “the Resource-Based View’s promise of improved public organizational performance is worth further investigation” (714). As I pointed out earlier, we have few well-developed theories or frameworks to explain the performance of government agencies. Therefore, this study attempts to apply this Resource-Based View to understanding how various resources relate to the performance (effectiveness) of public organizations. In other words, this study tries to move the study of resources in public organizations forward by examining the comprehensive and relative impacts of various resources on agency performance through the Resource-Based View.

This study proceeds as follows. In the next section, I will describe the framework and research question guiding this study, review the literature on resources in organizations and organizational effectiveness, and formulate a series of hypotheses that will be tested in this study. Second, I will discuss the methodology that this study uses in order to investigate the research question, including data gathering, operationalization and measurement of the variables, and data description. Then, I will describe the estimation approach of this study and offer the results of empirical analysis. Lastly, I will discuss this study’s findings, describe their implications for theory and practice, and offer suggestions for future research.

## **ORGANIZATIONAL RESOURCES AND AGENCY PERFORMANCE**

### **Resource-Based View**

As strategic management has become widely accepted with strategic planning in the public sector, so we need to consider the strategic understanding and management of resources through the RBV. Specifically, the RBV helps build a comprehensive theory of how various resources affect agency performance, and how agencies rely on new resource arrangements in the public sector for the following reasons. The RBV emphasizes the importance of resources in organizational performance. According to Williamson (1999), the main hypothesis of the RBV is that “ ‘more’ of the resources have a positive influence on the growth and performance of the firm” (1098). The RBV literature asks “why do firms in the same industry vary systematically in performance over time?” (Hoopes, Madsen, and Walker 2003: 889) or “Why do some firms persistently outperform others?” (Barney and Clark 2007: 3). The core argument of the RBV to these questions is that firms that possessed resources that were valuable and rare would attain a competitive advantage and enjoy improved performance in the short term (Barney 1991; Newbert 2007). The RBV observes that there are significant differences in the resources of firms within an industry for organizational survival, growth, and overall effectiveness (Wernerfelt 1984; Barney 1991; Peteraf 1993; Kraatz and Zajac 2001; Bryson et al. 2007). Distinctive organizational resources generate a sustainable competitive advantage and lead to better performance (Prahalad and Hamel 1990; Carmeli and Tishler 2004). Therefore, scholars, especially in the private sector, have used the RBV to investigate the relationship between firm resources and organizational performance (Hansen, Perry, and Reese 2004, 1279).

Bryson et al. (2007) claim that public strategic management theorists have been strongly influenced either explicitly or implicitly by the RBV. Scholars in the public sector have devoted considerable attention to the empirical impact of specific and individual resources, including human resources (e.g., Perry and Miller 1991; Pitts 2005; Peter and Søren forthcoming), financial resources (e.g., Evans, Murray, and Schwab 1997; Wenglinsky 1997; Henry and Rubenstein 2002), and real material resources (e.g., Lee and Perry 2002). However, few offer comprehensive theories of the role of various resources in organizational performance because they focus on single factor to explain variation in organizational performance (Carmeli and Tishler 2004). Also, some scholars in the public sector recognize explicitly the importance of the RBV, but have not tested it to offer comprehensive understanding of the relative role of various resources in agency performance (e.g., Daley and Vasu 2005; Hackler and Saxton 2007). Therefore, this study attempts to investigate the relative impact of various organizational resources on federal agencies' performance, using the RBV as a framework.

### **Types of Resources and Organizational Performance**

Broadly construed, resources are any assets that an organization might draw on to help it achieve its goals (Bryson et al. 2007, 704). More specifically, “resources include all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness” (Barney 1991, 101). Also, resources are the tangible and intangible assets firms use to develop and implement their strategies (Ray, Barney, and Muhanna 2004, 24).

As mentioned above, there exist many kinds of resources in an organization. Scholars have offered a variety of classifications for resource types. Bozeman and Straussman (1990, 47) offer three types: personnel resources, financial resources, and organizational structure. Russo and Fouts (1997) classify resources as physical assets and technologies, human resources and organizational capabilities, and the intangible resources of reputation and political acumen. According to Rainey and Steinbauer (1999), organizational resources are divided into financial, human, and technological resources. Hansen et al. (2004) classify an organization's resources into two broad concepts based on Penrose's (1959) argument: productive resources (which are needed for achieving goals) and administrative resources (which govern the use of productive resources). Fry, Stoner, and Hattwick (2004) divide resources into the people, physical materials, financial assets, and information.

In this study, I offer six types of organizational resources: administrative (structural) resources, human resources, financial resources, physical resources, political resources, and reputation resources. Human resources, financial resources, and physical resources are traditional inputs in any organization. Administrative resources serve as leadership structures for governing and managing these traditional resources. Political resources are key for government agencies and are distinctive to public organizations. Reputation is also an important intangible resource. This classification is used to investigate the impacts of various resources on federal agencies' performance.

***Administrative resources.*** By administrative resources, I include the top decision-making structure for an agency because, as Bozeman and Straussman (1990) point out, organizational (leadership) structure is one type of organizational resources.

According to Penrose (1959), the growth of a firm is limited by the bundle of productive resources controlled by a firm and by the administrative framework used to organize the use of these resources. Also, Hansen et al. (2004) argue that administrative resources govern productive resources which directly contribute to achieving organizational goals. In other words, administrative resources make decisions about selecting and deploying other resources. The value of administrative resources is reflected in the quality of administrative decisions which ultimately influence firm performance (Hansen et al. 2004, 1280). The top decision-making structure of an agency is often designed by Congress, but, once it is part of the agency, structure serves as an administrative resource governing productive resources.

Kor and Mahoney (2000) suggest focusing on the impact of the formation of the top-management team on firm performance in the Resource-Based View. Based on this idea, I focus on two aspects of the top decision-making structure of an agency: the number of members in the top decision-making structure, and the term length of these members. These two aspects play important roles in administrative decisions on selecting and deploying productive resources.

The first administrative resource is the number of members in the governing structure of an agency. A department has one member (a secretary); a commission or board has several members. Some researchers say that having more members in the top decision-making structure has disadvantages. Scholars such as Jensen (1993) and Firstenberg and Malkiel (1994) note that having a larger number of members can make the organization less effective due to greater participation. However, other scholars argue that having more members in the top leadership structure has advantages can enhance

organizational performance. First, resource dependence theory says that the size of the top decision-making structure measures an organization's ability to form environmental links and secure important assets (Goodstein, Gautam, and Boeker 1994); “the greater the need for effective external linkage, the larger the board should be” (Pfeffer and Salancik 1978, 172). A larger board or commission may reduce environmental uncertainty through external linkage. Second, the secretary, board members, or commissioners act like a Chief Executive Officer (CEO) for the agency. A larger board may provide higher quality advice and counsel (Dalton, Daily, Johnson, and Ellstrand 1999) since they may have more relevant experience and expertise (Lorsch and MacIver 1989, 174). In this study, I expect that more members in the top decision-making structure will result in better agency performance.

*Hypothesis 1: Agencies have higher performance scores when they have more board members or commissioners.*

The second type of administrative resource is the term length of members in the governing structure of an agency. Department secretaries do not have a fixed term of service. In contrast, members of a commission or board have fixed terms prescribed by law that vary across agency. Politicians may seek to insulate new administrative agencies from political control in order to protect specific policy outcomes both now and in the future (Moe 1989). For example, central bank that is responsible for monetary policy should be independent from political accountability to make monetary policy more effective (Kydland and Prescott 1977; Barro and Gordon 1983). Congress may want to reduce the effect of the president and its change on agency policies through insulation (Lewis 2003). Boards or commissions with fixed terms are insulated from presidential

control because they cannot be removed without cause (Lewis 2003, 47). According to Krause and Douglas (2005), bureaucratic performance is positively related to the degree of political insulation enjoyed by an administrative agency because “better-insulated agencies have a greater capacity to resist political pressures placed upon them to produce policy information that is compatible with politicians’ programmatic goals” (282). Also, the duration of appointee service affects administrative competence in that appointee competence in public policymaking and implementation depends on appointee experience (Wood and Marchbanks 2008), and consequently short duration of service implies amateurs acting on behalf of the president to execute the law (Hecklo 1977). Therefore, I expect that longer terms for members in the governing structure are positively related to better organizational performance.

*Hypothesis 2: Agencies have higher performance scores when they have longer fixed term length of board members or commissioners.*

**Human resources.** For this study, I focus on the number of full-time employees and the composition of the human resources in an agency. To consider the composition of the human resources, I include the proportion of professional employees and the proportion of the Senior Executive Service (career SES and non-career SES). According to the RBV, “scarce, valuable, and imperfectly imitable resources” (Kraatz and Zajac 2001, 632) create sustained performance differences by generating sustainable competitive advantages. These four types of human resources (i.e., professional employees, career SES, non-career SES, and full-time employees) are examples of distinctive and imperfectly imitable human resources of an agency which lead to competitive advantages and better performance.

The first type of human resources in the federal agency is the proportion of professional employees. The proportion of professional employees in the agency is closely connected with autonomy in human resources. Hiring professionals who exercise enormous influence through the application of their expertise by deciding crucial issues of society can increase agency's competitive advantages because "professionals strive continuously for freedom from external control over their activities and value internal accountability through peer-imposed codes of ethics" (Stillman 1999, 101). In other words, professionals can be scarce, valuable, and imperfectly imitable resources through professional expertise and neutrality. Therefore, I expect that professionals in human resources can have a positive impact on agency performance through professionalism because "professionalism can enhance an agency's performance by increasing its autonomy, due to the social status and intellectual authority and independence of professionals in the agency" (Rainey and Steinbauer 1999, 22-23).

*Hypothesis 3: Agencies have higher performance scores when they have a greater percentage of professionals.*

The second type of human resources is the proportion of Senior Executive Service (SES) in each agency. The SES is a corps of federal managers that serve in management positions between Senate-confirmed political appointees and the traditional civil service, and is comprised of a mixture of career managers and political appointees (Lewis 2007, 1077). Accordingly, this study divides SES into two types: non-career SES (i.e., politically appointed SES) and career SES. The SES aim at improving the quality of individual competence and agency performance by making experienced senior managers in government more flexible and mobile within and among agencies (Stillman 2004), by

providing experienced senior managers with separate rewards and punishment systems for achievements, and by giving experienced senior managers enhanced chances for personal development and professional certification (Perry and Miller 1991). The SES's considerable knowledge, skill, ability, and experience are the scarce, valuable, and imperfectly imitable resources of an agency, and can lead to sustainable competitive advantages and better performance. Accordingly, I expect that an agency will produce better performance when it has a greater proportion of SES.

*Hypothesis 4: Agencies have higher performance scores when they have a greater percentage of the non-career Senior Executive Service.*

*Hypothesis 5: Agencies have higher performance scores when they have a greater percentage of the career Senior Executive Service.*

The last type of human resources is the number of full-time employees in an agency. The number of full-time government employees directly measures size (Christensen and Sachs 1980). Scholars have studied the impact of the number of staff on agency performance or service performance (e.g., Whetten 1978; Christensen and Sachs 1980; Glisson and Martin 1980; Lan and Rainey 1992); size does not seem to systematically cause organizational performance (Boyne 2003). While Blau (1970) points out that a large number of members can create coordination and communication problems that a small group does not have, other scholars argue that agencies with more employees have greater capabilities to solve tasks (Hill 1982; Jackson 1992) because they can absorb or recall more information about tasks, more critical judgments available to correct errors, and more possible solution strategies (Harrison 1975; Shaw 1981; Halebrian and Finkelstein 1993, 846). Those capabilities may help explain the higher-quality decisions

sometimes reported in large groups (Cummings, Huber, and Arendt, 1974). Enhanced capacities for problem-solving offer competitive advantages for an organization that lead to better performance. For this study, I expect a positive impact of the number of full-time employees on agency performance.

*Hypothesis 6: Agencies have higher performance scores when they have more full-time employees.*

**Financial resources.** Financial resources are basic resources that can be used to acquire other resources such as purchasing equipment, paying workers, and buying advertising (Fry et al. 2004). Ample funding is indispensable to provide agencies with the administrative and technical capacity to make sure that they achieve statutory objectives (Fernandez and Rainey 2006). This study focuses on two forms of budget authority<sup>2</sup> (i.e., an appropriation and the spending authority from offsetting collections) as financial resources because these two kinds of budget authority come from contrasting sources: while appropriations come from the U.S. Treasury, offsetting collections come mainly from business-like or market-oriented activities.

The first type of financial resources is the proportion of appropriations in the total amount of budgetary resources. Appropriations are an approval by the Congress that allows agencies to incur obligations and to make payments out of the Treasury for specific purposes (Schafritz and Russell 2003, 450). Appropriations create the authorization for spending the amount in the budget (Finkler 2001).

The second type of financial resources is the proportion of the amount of spending authority from offsetting collections in the total amount of budgetary resources.

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<sup>2</sup> According to the budget system and concepts in the *Budget of the United States Government*, budget authority is the amount of money that agencies are allowed to commit to be spent in current or future years. The basic forms of budget authority are appropriations, contract authority, borrowing authority, and spending authority from offsetting collections.

According to the *Budget of the United States Government*, spending authority from offsetting collections is a form of budget authority that permits agencies to credit offsetting collections to an expenditure account, incur obligations, and make payment using the offsetting collections.

The impact of financial resources on performance has usually been studied in the field of education. There has been an enduring discussion of whether differences in the educational expenditure of the schools make any difference in student performance, but no consensus has yet been reached (Wenglinsky 1997, iii). Meta-analysis by Hanushek (1989) concludes that “there is no strong or systematic relationship between school expenditures and student performance” (47). One argument, according to public choice theorists, is that self-interested bureaucrats have the incentive to ask for larger budgets (Niskanen 1971) and extra money is wasted away by inefficient and wasteful bureaucrats (Boyne 2003). In contrast, meta-analysis by Hedges, Laine, and Greenwald (1994) finds that an argument can be made for a positive relationship between school spending and educational performance. This study expects that both a greater proportion of appropriations and a greater proportion of spending authority from offsetting collections have positive impacts on agency performance because financial resources help an organization acquire the employees, technical capacity, well-maintained facilities, and so on that can enhance agency’s competitive advantages and improve performance.

*Hypothesis 7: Agencies have higher performance scores when they have a greater percentage of appropriations.*

*Hypothesis 8: Agencies have higher performance scores when they have a greater percentage of spending authority from offsetting collections.*

*Physical resources.* According to Barney (1991), physical resources include the physical technology used in an organization, an organization's equipment, its geographic location, and raw materials. In a similar way, Fry et al. (2004) argue that physical resources include fixed assets (such as land, building, and equipment), raw materials that will be used in creating products, and general supplies used in the operation of the organization (334). While financial resources can be used flexibly to purchase equipment, pay workers, and buy advertising, physical resources are relatively inflexible in that they are more directly connected with the operation of an organization and the achievement of organizational goals than financial resources. In this study, I focus on the (dollar) amount of general property, plant and equipment in total assets of an agency as a physical resource. According to the *Statements of Federal Financial Accounting Concepts and Standards* (Federal Accounting Standards Advisory Board 2007), general property, plant, and equipment are tangible assets the agency uses when providing general government goods or services (492). They should have an estimated useful life of two or more years, not be intended for sale in the ordinary course of business, and be intended to be used or available for use by the entity. The amount of general property, plant, and equipment represents the amount of a physical resource because it includes the amount of fixed assets (such as land, facilities, and equipment) and general supplies (such as furniture and software) in an agency. I expect that a greater amount of general property, plant and equipment has a positive impact on agency performance because greater amount of physical resources can help an agency have better work conditions and environments that lead to better performance (Fry et al. 2004).

*Hypothesis 9: Agencies have higher performance scores when they have a greater percentage of general property, plant and equipment.*

***Political resources.*** The fifth research question of this study is the impact of political resources on organizational performance. Bozeman (1987) argues that all organizations are subject to some level of external influence by political authority. According to Rainey (2003), there are various sources of political influence such as chief executives, legislative bodies, courts, interest groups, news media, citizens, and so on. Therefore, inevitably, public organizations need to consider the influence of political authorities. Especially, the political support of these authorities for an agency is a key factor of successful agencies, reducing the potential for micromanagement on the part of elected officials and allowing bureaucrats to focus consistently on long-term goals (Wolf 1993; Rainey and Steinbauer 1999; Moynihan and Pandey 2005). Moynihan and Pandey (2005) measure political support of an agency by elected official support of the agency, degree of client influence, and degree of public/media influence, and show that elected official support of an agency and the degree of public/media influence have both significant and positive influences on organizational effectiveness. Based on Moynihan and Pandey's (2005) research, this study focuses on three kinds of political resources of an agency: presidential attention, congressional attention, and mass media attention. By political attention, I mean both support and concern of these political actors as a political resource; support for a well performing agency and concern for a poorly performing agency can be valuable and imperfectly imitable resources leading to employees' motivation, competitive advantage, and better performance.

The first type of political attention is presidential attention. The president is influential in policy-making and performance (Beck 1982; Moe 1982, 1985; Chubb 1983). For example, according to Moe (1985), the president, congressional committees, the courts, and constituent have significant impacts on the decision of the National Labor Relations Board (NLRB). More specifically, Wolf (1993) argues that agencies that possess the key political resource of presidential support can manage change effectively; he demonstrates that presidential support has a positive and significant impact on agency effectiveness. Therefore, I expect that presidential attention to the agency has a positive impact on agency performance.

*Hypothesis 10: Agencies have higher performance scores when they have a higher presidential attention.*

The second type is congressional attention to an agency. Congress helps determine and set the agenda (Baumgartner and Jones 1993; Kingdon 1995). However, the role of Congress is not limited to agenda setting. For example, Congress affects the performance of NLRB through its oversight power by making life difficult or easy for bureaucrats and threatening or promoting bureaucratic careers (Moe 1985). Members of Congress value their time, so they spend their time on priority policy issues (Flemming, Wood, and Bohte 1999; Whitford and Yates 2003). Attracting congressional attention serves as a political resource because Congress can initiate and authorize legislation for agency operations. In this study, I expect that the congressional attention to the agency has a positive impact on agency performance.

*Hypothesis 11: Agencies have higher performance scores when they have a higher congressional attention.*

The third type of political attention is mass media attention to an agency. Research on the effect of the media on policy agenda setting has reached contradictory conclusions (Edwards and Wood 1999). Rogers and Dearing (1994) argue that the mass media has a direct and sometimes strong influence on the policy agenda of elite decision makers. Yet, according to Kingdon (1995), “The media report what is going on in government, by and large, rather than having an independent effect on government agendas” (59). However, close media scrutiny of government plays an indispensable role in governance (Rainey 2003). A survey of high-level executives in various presidential administrations shows that the vast majority of them regarded media coverage as having a significant influence on public policy (Graber 2003). Almost all agencies are concerned about media attention because the public’s familiarity with political matters is closely connected to the amount and duration of attention these agencies and issues receive in the media (Page and Shapiro 1992). According to Iyengar (1991, 2), issues and events highlighted by television news coverage become influential as criteria for evaluating public employees. Therefore, favorable press coverage of an agency can be a good political impetus to that agency for its goals and, at the same time, unfavorable media coverage can also be a critical political stimulus for that agency to look back on and rearrange itself for its goals. In this context, I expect that media attention to the agency has a positive impact on federal agencies’ performance.

*Hypothesis 12: Agencies have higher performance scores when they have a higher media attention.*

***Reputation as a resource.*** Reputation has been introduced as an important intangible resource (Russo and Fouts 1997; Huang and Provan 2007), representing an

overall assessment of an organization's operation and performance (Teece, Pisano, and Shuen 1997). According to Roberts and Dowling (1997), reputation is an extremely important strategic asset and superior performers with favorable reputation are able to sustain superior outcomes for longer periods of time. Citizen opinions or evaluations of an agency's operation or performance are important and critical to that agency because reputational effects can be a powerful force for controlling behavior in a social system (Granovetter 1985). According to bureaucratic reputation theory, reputation is a strong incentive for bureaucratic agencies to be concerned with their maintenance in order to protect themselves against being distinguished as inferior agents (Brehm and Gates 1997; March 1999; Whitford 2003; Krause and Douglas 2005, 282). The reasons are as follows. Agency reputation can enhance bureaucratic autonomy (Carpenter 2001; Whitford 2002) and professional prestige (Wilson 1989). A good reputation of an agency is key to success in staff motivation, staff retention, and overall organizational health and a bad reputation can often create irreversible damage to an agency (Huang and Provan 2007). Having a good reputation means enhanced legitimacy for an organization (Scott 2001). These benefits that reputation can enhance, such as agency legitimacy, professional prestige, staff motivation, and bureaucratic autonomy, are scarce, valuable, and imperfectly imitable resources of an agency which lead to sustainable competitive advantages and better performance. In this vein, I expect that an agency's public reputation has a positive impact on agency performance.

*Hypothesis 13: Agencies have higher performance scores when they have a higher public reputation.*

## **MODEL SPECIFICATION**

## **Data**

The unit of analysis of this study is federal agencies. By the federal agency I mean the executive agency. According to the title 5 of the United States Code, executive agency means an executive department, a government corporation, and an independent establishment. Among them, this study includes executive departments (i.e., 15 cabinet agencies) and independent establishments (i.e., independent agencies). All the data for this study are gathered from fiscal year (FY) 2003 to FY 2007, but sample size is not distributed evenly across years, due to the data availability. Therefore, the data set for this study is an unbalanced panel data set. The majority of organizational performance studies use cross-sectional analysis, but I compiled an unbalanced panel dataset for this study. This dataset can provide useful information in terms of longitudinal analysis. The in-depth discussion about data sources and collection will be addressed by variables in the following section, as the data for this study were gathered from a variety of sources to avoid a mono-source bias, which is a frequent problem in using a survey data set. Table 1 provides the descriptive statistics of the variables in this study.

[Insert Table 1 about here]

## **Dependent Variable**

The dependent variable of this study is the federal agencies' performance (effectiveness). Few questions challenge scholars more than what constitutes organizational performance (Selden and Sowa 2004). Ironically, while public officials and scholars emphasize measures of organizational effectiveness, scholars have yet to develop clear and conclusive ways of defining and assessing effectiveness (Rainey 2003). In other words, there is little consensus as to what organizational effectiveness means and what

constitutes a valid set of measurement criteria. As Campbell (1977) pointed out, particular conceptualization and measurement of organizational effectiveness may be useful only for a certain purpose of that research. In other words, the search for the one best measurement may be just as futile as the search for the one best way (Behn 1996). In this context, I will use the traditional concept of effectiveness - that is, the degree to which an organization achieves its goals (Daft 2001, 22) - to measure agencies' organizational performance.

In this study, federal agencies' performance is measured by the level of agencies' goal achievement. The data for a dependent variable were gathered from each agency's Performance and Accountability Report (PAR)<sup>3</sup>. The purpose of agencies' annual Performance and Accountability Reports is to provide their performance information that enables the President, the Congress, and the public to assess the performance of agencies relative to their mission and to demonstrate accountability. To that end, they provide their agencies' strategic goals (or strategic objectives) and specific annual performance indicators (and targets) for achieving these strategic goals, based on their own strategic plans. In addition, they report that fiscal year's performance results in terms of whether the actual performance results meet the targets of performance indicators. For example, annual performance indicators are graded as 'exceeded' when the actual performance results exceed the targets of performance indicators and annual performance indicators are graded as 'met' when the actual performance results meet the targets of performance indicators. If the actual performance results fail to satisfy the targets of performance

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<sup>3</sup> Under the Reports Consolidation Act of 2000, agencies are permitted to submit combined reports in implementing statutory requirements for financial and performance management reporting to improve the efficiency of executive branch performance. These reports are combined in this annual Performance and Accountability Report which satisfies the reporting requirements of the following major legislation: Chief Financial Officers Act of 1990, Government Performance and Results Act of 1993, Government Management Reform Act of 1994, and Reports Consolidation Act of 2000.

indicators, they are graded as 'unmet'. They mark as 'not assessed' when the data are not available. In this study, an agency's goal achievement was measured by the percentage of met or exceeded annual performance indicators in an agency's total annual performance indicators (i.e., number of met or exceeded annual performance indicators / number of total annual performance indicators<sup>4</sup>) in each agency's annual Performance and Accountability Report. This study performed a logit transformation on the dependent variable because it is a proportion.

### **Independent Variables**

*Administrative resources.* The first variable of administrative resources is the number of members in the top leadership structure (i.e., a count of the number of agency administrators including board members and commissioners). Agencies without a commission or a board structure are coded 1 and all other agencies are coded according to the numbers of commissioner or board members (Lewis 2003). Data for this variable were obtained from each agency's Performance and Accountability Report, agency website, and the U.S. Government Manual.

The second variable of administrative resources is the term length (year) of members in top decision-making structure of an agency. Agencies without fixed terms are coded with a 0, and all other agencies are coded according to the length of the term (Lewis 2003). Data for this variable were obtained from each agency's Performance and Accountability Report, agency website, and the U.S. Government Manual.

*Human resources.* The second resource category is human resources. Human resources are composed of three specific variables. They are professional employees, the Senior Executive Service, and number of full-time employees. For this study,

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<sup>4</sup> This study does not include 'not assessed' rating in counting number of total annual performance indicators.

professional employees are measured by the proportion (%) of professionals in an agency's total number of employees and the non-career SES and career SES are measured by the proportion (%) of each SES category in an agency's total number of employees. For the number of full-time employees, this study uses total number of full-time employees in an agency. The information about these human resources variables was gathered from the Federal Human Resources Database (FedScope) and the Central Personnel Data File (CPDF) in the Office of Personnel Management.

***Financial resources.*** The third resource category of this study is financial resources. This study offers two specific variables for financial resources. They are appropriations and spending authority from offsetting collections. Appropriations are measured by the proportion (%) of the appropriation in the total budgetary resources and spending authority from offsetting collections is measured by the proportion (%) of the spending authority from offsetting collections in total budgetary resources. The information about an agency's appropriations and spending authority from offsetting collections was gathered from the combined statement of budgetary resources in each agency's Performance and Accountability Reports from FY 2003 to FY 2007.

***Physical resource.*** The fourth resource category of this study is the physical resource. This study measures physical resources by the proportion (%) of general property, plant and equipment in an agency's total assets. The information on physical resources was collected from the balance sheet in each agency's Performance and Accountability Reports from FY 2003 to 2007.

***Political Resources.*** The fifth resource category is political resources. The first political resources variable of this study is presidential attention to an agency. It is

measured by the number of the presidential documents such as statements, remarks, executive orders, conferences, addresses, and so on that contain an agency's name. The more an agency is mentioned, the more attention it obtains because the president allocates his/her limited time and ability according to the priority of affairs. Many scholars have used similar ways of measuring presidential attention. For example, Edwards and Wood (1999) use Public Papers of the President, an annual compilation of presidential activities to capture presidential attention. In this study, data on presidential attention to an agency were obtained from the website of the American Presidency Project.

The second political resources variable of this study is congressional attention to an agency. It is measured by the number of the congressional records that contain an agency's name. The more an agency is mentioned, the more attention it obtains because members of Congress spend their time on priority policy issues (Flemming et al. 1999; Whitford and Yates 2003). For example, Whitford and Yates (2003) measure congressional attention to drug policy by counting the number of congressional hearings devoted to drug policy issues using Baumgartner and Jones' (1993) Data Set. In this study, data on congressional attention to an agency were gathered from the Congressional Record database on the website of the Government Printing Office. The Congressional Record is the official record of the proceedings and debates of the United States Congress. It is published daily when Congress is in session.

The third political resources variable of this study is mass media attention to an agency. The more an agency is mentioned, the more attention it obtains because mass media tend to focus on important and controversial issues in order to generate an

audience<sup>5</sup> (Rainey 2003). For example, Lee, Rainey, and Chun (forthcoming) also use the *New York Times* and the *Washington Post* to measure salience to mass media. In this study, mass media attention is measured by the number of televised news stories that mention an agency's name. The data on media attention to an agency were obtained from the Vanderbilt Television News Archive (for the number of news stories that contain an agency's name)<sup>6</sup>.

***Reputation resource.*** The last resource category of this study is a reputation resource. To measure an agency's reputation, this study uses each agency's Freedom of Information Act (FOIA) (U.S. Code, Title 5, Section 552) report. According to the Freedom of Information Act, each agency to which the FOIA applies should submit to the Attorney General of the U.S. an annual report which shall include the statistics and information on the requests such as number of initial requests, disposition of initial requests, number of appeals, compliance with time limit, and so on. The purpose of the FOIA is to ensure public access to U.S. government records and provide information in a timely manner (ordinarily 20 working days from proper receipt of a perfected FOIA request). Consequently, the number of request denial and time period to respond to a request can be good proxies for agency's public reputation because large number of denial and long processing time give significant damages to an agency's reputation. Therefore, this study measures agency reputation by a combined index (i.e., average of

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<sup>5</sup> As Rainey (2003) points out, news coverage of government seems to be more and more negative. As mentioned earlier, however, this kind of unfavorable media coverage can also be a critical political stimulus for that agency to look back on and rearrange itself for its goals.

<sup>6</sup> The Vanderbilt Television News Archive has been recording, preserving and providing access to television news broadcasts of the national networks since August 5, 1968. I searched the regularly scheduled newscasts from ABC, CBS, NBC, CNN and Fox News for an agency's name and counted the number of televised news stories that mentioned an agency's name. I excluded commercials, program introductions, and anchors' good-night segments from the search results. I also excluded overlapped results from the search results. For example, to find out how many times 'Department of Agriculture' was mentioned in the newscasts, I had to check the terms 'Department of Agriculture', 'Agriculture Department', 'U.S. Department of Agriculture', 'U.S. Agriculture Department', and 'USDA' at the same time and then remove any overlapped newscasts as well as any newscasts related to state agriculture departments from the search results. Because of this redundancy problem and complex search results, I did not use the newspaper archives for this mass media attention variable. Newspaper archives often provide too many search results to control and manage.

two Z-scores) of the Z-score of the number of denied requests and the Z-score of time period to respond to requests. The lower a combined index, the higher an agency's reputation because a lower combined index means a satisfactory public service which leads to high agency reputation.

This study includes agency age to control for agency characteristic. According to Thornhill and Amit (2003), young organizations will be more prone to failure as a function of general management because time is required to develop the necessary organization-specific knowledge, skills, and abilities. The age of an agency is measured by the number of years after the agency's establishment (Chun and Rainey 2005). Agency age data were obtained from each agency's Performance and Accountability Reports from 2003 to 2007 and the U.S. Government Manual.

### **MODEL ESTIMATION AND RESULTS**

Panel data can enhance the quality of empirical analysis in ways that would be impossible if we used only cross-section or time series data (Gujarati 2003). Yet, this does not mean that there are no problems with panel data. Issues of interest in panel data are the presence of serial correlation of an error term and the presence of heteroskedasticity of an error term. I first ran Ordinary Least Squares and conducted the tests for AR(1) serial autocorrelation and heteroskedasticity. According to the T test for the presence of AR(1) serial autocorrelation, the dataset for this study had a serial autocorrelation problem. Breusch-Pagan test for heteroskedasticity rejected the null hypothesis of constant variance. Therefore, this study performed feasible generalized least squares (FGLS) in

Stata 9.0 to take care of both heteroskedasticity and serial autocorrelation issues.<sup>7</sup> More specifically, this study modeled heteroskedastic error structure with AR(1) autocorrelation common to all the panels. This study tested the aforementioned hypotheses simultaneously. Table 2 shows the estimation results of the cross-sectional time-series FGLS regression. Generally, the model fits well, with Wald  $\chi^2$  significant at better than 0.001.

[Insert Table 2 about here]

First, in the case of administrative resources, both variables (term length of members in top leadership and number of members in top leadership) show the expected relationships with agency effectiveness, but the statistical significance is different. Number of members in top leadership has a significant and positive relationship with agency effectiveness at the 0.10 level (i.e., hypothesis 1 was supported), while term length of members in top leadership has a statistically insignificant and positive relationship (i.e., hypothesis 2 was rejected). That is, agencies have higher performance scores when they have more board members or commissioners in their top decision-making structures because more members can provide higher quality advice, expertise, and experience and reduce environmental uncertainty through external linkage.

This study includes four types of human resources. Professional employees in an agency have a significant and positive influence on agency effectiveness at the 0.05 level, as expected (i.e., hypothesis 3 was supported). In other words, more professional employees can lead to better agency performance through enhancing their autonomy, intellectual authority, and independence. Career SES had the expected positive

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<sup>7</sup> A fixed effects model cannot be used for this analysis because this study has two time-invariant variables (i.e., term length of members in top leadership and number of members in top leadership). A random effects model cannot be used because the joint significance test of the coefficients is not significant.

relationship with agency effectiveness, but this positive relationship is not statistically significant (i.e., hypothesis 5 was rejected). In contrast, non-career SES showed a negative and significant relationship with the dependent variable at the 0.10 level (i.e., hypothesis 4 was rejected). That is, agencies have lower performance scores when they have a greater percentage of the non-career Senior Executive Service. This negative, but significant, impact of non-career SES on agency effectiveness can be explained as follows. Non-career SES (who are politically appointed) can lead to a negative influence on agency effectiveness because, even if non-career SES have enough experience and expertise, agencies that have politically appointed SES often experience greater turnover and this higher turnover causes ambiguous agency goals, leadership vacuums, difficulties to commit to reform, and poorer performance (Hecl 1977; Boylan 2004; Lewis 2007). The last human resources variable is full-time employees. In contrast to my expectation, the number of full-time employees had a negative and significant impact on agency effectiveness at the 0.01 level (i.e., hypothesis 6 was rejected). In other words, agencies show lower performance scores when they have more full-time employees. As Blau (1970) points out, one possible explanation is that a large number of members can create coordination and communication problems that a small group does not have and these problems can lead to lower performance.

In the case of financial resources, spending authority from offsetting collections had a positive and insignificant relationship with agency effectiveness (i.e., hypothesis 8 was rejected). Appropriations also had an insignificant impact on agency effectiveness, but this relationship was negative, unlike my expectation (i.e., hypothesis 7 was rejected). These results are consistent with Boyne's (2003, 376) argument that a majority of

empirical evidence shows no significant relationship between financial resources and service performance.

In contrast to my expectation, physical resources (general property, plant, and equipment) had a negative and insignificant relationship with agency effectiveness. Therefore, hypothesis 9 was rejected.

This study included three political resources variables (presidential attention, congressional attention, and mass media attention). While all three political resources variables had positive relationships with agency effectiveness as expected, only presidential attention had a statistically significant impact on agency effectiveness at the 0.10 level (i.e., hypothesis 10 was supported and hypotheses 11-12 were rejected). In other words, agencies have higher performance scores when they have a higher presidential attention. This result is congruent with Wolf's (1993) demonstration that presidential support has a positive and significant impact on agency effectiveness. Congressional attention and mass media attention also showed positive relationships with agency effectiveness, but they were not statistically significant.

The estimation results revealed that reputation has a negative and significant impact on agency effectiveness at the 0.01 level. Hypothesis 13 was supported because a lower combined index means a satisfactory public service which leads to high agency reputation. That is, agencies have higher performance scores when they have a higher public reputation because benefits from reputation, such as agency legitimacy, professional prestige, staff motivation, and bureaucratic autonomy, can be the agencies' useful assets.

This study calculated the impacts of six significant resources on agency effectiveness through marginal effects analysis. According to the analysis results, the impact of the number of members in top leadership on agency effectiveness was the biggest: the impact of a 1 standard deviation increase in the number of members in top leadership was a 0.216 standard deviation increase in agency effectiveness (*ceteris paribus*). The impact of a 1 standard deviation increase in the percentage of professionals in an agency was a 0.193 standard deviation increase in agency effectiveness. The impact of full-time employees was almost the same as that of professionals, but the direction was negative: a 1 standard deviation increase in the number of full-time employees was a 0.192 standard deviation decrease in agency effectiveness. The impact of a 1 standard deviation increase in the percentage of non-career SES in an agency was a 0.168 standard deviation decrease in agency effectiveness. Marginal effects analysis showed that the impact of a 1 standard deviation increase in agency's public reputation was a 0.133 standard deviation decrease in agency effectiveness. The impact of presidential attention was the smallest: the impact of a 1 standard deviation increase in presidential attention was a 0.083 standard deviation increase in agency effectiveness (*ceteris paribus*).

## **DISCUSSION AND CONCLUSION**

Public organizations are using a variety of resources in managing their organizations, pursuing their organizational goals, and implementing their policies or programs. The ultimate purpose of these activities is to produce better public service for the citizens. In the public sector, however, we do not have enough comprehensive and empirical knowledge about what kinds of resources exist, whether various resources really contribute to organizational performance, which resources are more important than others,

and so on. Therefore, this study tests the relative impacts of various organizational resources (administrative, human, financial, physical, political, and reputation resources) on federal agencies' effectiveness through the Resource-Based View.

According to the analysis results, a variety of resources show relatively different impacts on agency effectiveness: some resources have positive and significant influences on agency effectiveness and others have negative or insignificant relationships with agency performance. Resources such as number of members in top leadership, professional employees, presidential attention, and agency's public reputation have positive and significant relationships with agency effectiveness, as expected. Also, number of members in top leadership shows the biggest impact on agency effectiveness. Non-career SES and full-time employees have significant relationships with agency effectiveness, but they have negative impacts, unlike my expectation.

This study provides useful strategic knowledge about resources to enhance federal agencies' performance. That is, number of members in top leadership, professional employees, presidential attention, and agency's public reputation can be valuable and critical assets to federal agencies that lead to competitive advantages and better performance. These results suggest that federal agencies can perform better when they have more members in their top decision-making structure, more professional employees, more political support from the president, and higher reputation from the citizens. Therefore, trying to have more of these resources can be an effective strategy for producing better performance. Of course, in the case of number of members in the top decision-making structure, it is strictly fixed by the law, but we can consider this suggestion (i.e., federal agencies can perform better when they have more members in

their top decision-making structure) when we create new organizations. Also, this analysis implies that it can be helpful for federal agencies' performance not to have too many non-career SES or full-time employees. Numerous scholars argue that management matters in improving performance in the public sector. Thus, management that understands the relative impacts of various resources in federal agencies can play a significant role in improving public organizations' performance more strategically.

This study also provides helpful information for poorly performing agencies. Poorly performing agencies tend to imitate successful agencies' strategies as best practices. If the relationship between an agency's resources and its performance is poorly understood, it is difficult for agencies attempting to duplicate a successful agency's strategies through imitation of its resources to know which resources it should imitate (Barney and Clark 2007: 62). By examining the link between resources and agency effectiveness, this study gives poorly performing agencies an idea about which resources have positive impacts and which resources have negative influences on performance.

In addition, this study can make other noteworthy contributions to the literature on public administration and public management. For example, this study develops and uses objective measures of organizational effectiveness from the Performance and Accountability Reports as a dependent variable, whereas many research studies have used subjective measures such as perceptual measures of performance from a survey dataset. Also, the majority of organizational performance studies use cross-sectional analysis, but this study compiles a time-series cross-sectional dataset (i.e., panel dataset) consisting of data from the fiscal years 2003 to 2007. This longitudinal analysis can provide useful

information and enhance the quality of empirical analysis in ways that would be impossible if we used only cross-section or time-series data.

I close this study with discussion of limitations and suggestions for the future research. One concern about this study is the possibility of endogeneity in three political attention variables. That is, there is the possibility of a two-way relationship between agency performance and the three political attention variables. In this study, the data for the three political attention variables are from one year prior to the data for the performance variable in terms of a temporal ordering so that the causality associated with the relationship could be unidirectional, although this does not necessarily solve the endogeneity problem. As Wooldridge (2003) points out, as in this study, finding a proxy variable or instrumental variables as solutions to endogeneity is difficult. Future research should continue to address this limitation. In addition, future research needs to develop and include appropriate measures for invisible resources such as technology, customer trust, and agency culture, as Itami (1987) argues, in order to provide more valid and comprehensive evidence for the impacts of various resources on agency performance.

**Table 1. Descriptive Statistics**

Variables	Mean	SD	Min	Max
<b>Dependent Variable</b>				
Agency Effectiveness (logit transformed)	1.25	.95	-.69	4.59
<b>Independent Variables</b>				
Term length of members in top leadership (Year)	2.33	2.86	0	9
Number of members in top leadership (Number)	2.39	2.27	1	15
Professionals (%)	.28	.18	.00	.66
Non-career Senior Executive Service (%)	.00	.00	0	.02
Career Senior Executive Service (%)	.01	.02	0	.07
Full-time employees (1000)	46.01	110.08	.04	645.64
Appropriations (%)	.71	.29	0	1
Spending authority from offsetting collections (%)	.13	.18	0	.83
General property, plant and equipment (%)	.16	.19	0	.78
Presidential attention (100)	.18	.29	0	1.62
Congressional attention (100)	2.72	2.66	0	13.06
Mass media attention (100)	.18	.38	0	2.79
Agency's public reputation (Z-score)	.06	.77	-.50	4.39
Age (100)	.63	.50	.02	2.18

**Table 2. Cross-Sectional Time-Series FGLS Regression Result**

Dependent Variable: Agency's Effectiveness		
Independent Variables	Coefficient	Standard Error
Term length of members in top leadership	.012	.029
Number of members in top leadership	.091	.054 †
Professionals	1.018	.398 *
Non-career Senior Executive Service	-63.813	34.029 †
Career Senior Executive Service	5.491	5.853
Full-time employees	-.002	.001 **
Appropriations	-.043	.195
Spending authority from offsetting collections	.848	.548
General property, plant and equipment	-.319	.548
Presidential attention	.272	.145 †
Congressional attention	.032	.029
Mass media attention	.026	.139
Agency's public reputation	-.164	.058 **
Age	.044	.086
Constant	.619	.224 **
Observations	178	
Sample period	2003-2007	
Wald $\chi^2$	65.87 ***	
Log likelihood	-137.8888	

(\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, † p<0.10)

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