BOARD ACTIVITIES, INVOLVEMENT AND PUBLIC TRANSIT PERFORMANCE[1]

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Introduction

There is growing concern about the performance of the boards of directors of business organizations. Executive pay structures continue to reward senior level management with very high salaries and stock options even when organizational performance, measured in financial terms, is in decline. Accounts of failures of top level managers to provide appropriate information to help boards of directors make decisions required by their oversight functions and responsibility. Absence of full information prevents boards from acting in the collective interests of stakeholders. These concerns raise the issue of whether boards of directors have become captives of senior level management and are able to perform their fiduciary roles effectively. Moreover, the failure of boards of directors to perform their functions effectively may have an impact on organizational performance.

A number of studies attempt to relate organizational performance to the performance of boards of directors. The literature suggests that a board's inability to perform its oversight role is directly related to poor organizational performance (Demb and Neubauer 1992). Studies suggest what can be done to improve the performance of boards of directors of private sector firms. It is an empirical question, however, if such improvements can also hold true for the boards of public sector organizations such as public transit systems.

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The objective of this paper to determine if the performance of prescribed activities of public transit boards of directors affects organizational performance. The study analyzes the degree to which board members are involved in prescribed activities as an indication of board effectiveness using self-rated survey responses. Public transit organizational performance measures from US Section 15 sources are used to determine their relationships with board performance. The paper begins with a brief literature review. Next, the methodology and tests of hypotheses are presented; followed by the discussion of the results and conclusion.

Literature Review

By U.S. law, the board of directors of any organization is a group that functions as the representative of the owners of an enterprise or organization. In the private sector, it represents the interests of the shareholders, and in the public sector, it represents taxpayers and the public served. According to Drucker (1954), the board functions as an organ of review, appraisal and appeal. However, in time of crises, it can function as an organ or body that takes action, especially when the integrity, survival and effectiveness of the organization are threatened by such crises. Nonprofit boards, however, are expected to meet both legal and moral expectations. U.S. law holds these boards responsible, as public stewards, for the legitimate operations of the organizations they supervise to ensure that the interests of the larger community are served (Herman and Heimovics, 1991).

Historically, boards of directors consisted of influential people in society who hardly came under public scrutiny. In recent years, increased interests of owners, i.e., shareholders, institutional investors and taxpayers, and the complexity of modern organizations, have acted in concert to renew interests in the roles, functions, selection and composition of the board of directors. These demands introduced the concept of entrepreneurship into the management environment of nonprofit organizations. This, according to Dess (1998), requires nonprofit organizations to have a mission that calls for relentless pursuit of social agenda, objectives and opportunities by engaging in continuous innovations and adaptations by acting boldly without

being limited by currently available resources, and by demonstrating accountability to stakeholders. This paradigm shift imposes new demands on nonprofit boards to ensure that their organizations develop strategies, ranging from the traditional fee-for-service to mutually beneficial business-like venture partnerships with other organizations (Herman and Renz, 1998). Taylor et al. (1996), Letts et al. (1999) called for nonprofit boards to expand their current roles and responsibilities beyond their legal requirements to include active involvement in decisions regarding the mission, strategies and programs of their organizations. This shift has also renewed interests in the roles and responsibilities of nonprofit boards and the impact of selection, size, composition, compensation, tenure and diversity on the roles and effectiveness of the board of directors and how they relate to organizational performance in terms of profit and return on shareholder equity.

Organizational Performance: A number of approaches have been used to study, measure and determine organizational performance in the public sector. They include the goal approach, systems resource approach, internal process approach and multiple constituency approach. The goal approach focuses on the extent to which an organization accomplishes its formally stated and operative goals, i.e., effectiveness. This approach is based on the assumption that all organizations are goal oriented. Its major appeal is ease of measurement, particularly clearly defined operative goals and objectives. However, the empirical problem with it lies in how to choose a set of goals whose achievement serves as an overall measure of an organizational effectiveness (Yates, 1996).

The system's approach views the organization as consisting of interrelated parts or subsystems that function together to accomplish the objectives of the unified whole. These subsystems are resource acquisition, transformation, and output. Overall organizational performance is assessed by evaluating the effectiveness of each subsystem, and how well they function together. The input resource approach focuses on the ability of an organization to exploit its environment in the acquisition of scarce and valued resources that are needed to accomplish stated organizational goals and objectives

(Yuchtman and Seashore, 1967). The internal process approach evaluates the efficiency of the internal structural systems responsible for transforming inputs into outputs. It focuses on factors that promote internal organizational health, employee satisfaction and the seamless flow of interdepartmental production-related activities to ensure high productivity, i.e., efficiency.

Each approach provides different perspectives but none paints a complete picture of organizational performance. Consequently, Herman and Renz (1998) argue for an integrated evaluation of organizational effectiveness. This, in part, led to the development of the multiple constituency approach that sees the organization from the perspectives of its many stakeholders, each with interest in the organization's performance. These stakeholders include owners, employees, consumers, creditors, local community, suppliers and governments. Questions in the multiple constituency approach are how well an organization satisfies the competing needs of each of its stakeholders, whose needs are important and how they are determined and prioritized. These questions notwithstanding, the strength of the multiple constituency approach is in its ability to take an integrated view that considers factors that are within the organization and its external environment, ability to handle several criteria simultaneously, inputs, internal processes and outputs (Daft, 1998).

Because of their (dis)advantages the choice of an approach depends on the type of organization and what is relevant to the fulfillment of its mission. Chu et al (1992) suggests that being efficient does not necessarily imply effectiveness. These authors suggest that tradeoffs are possible and indeed exist between efficiency and effectiveness. This paper uses cost per passenger and cost per vehicle hour as the measure of organizational effectiveness and organizational efficiency respectively. First, public transit is a social service with a focus on serving a large population within bounds of cost. Second, transit systems are funded largely by tax payers whose primary interests are the most effective (and efficient) use of their tax dollars. Third, transit's stakeholders are most likely to evaluate public transit organizations by their effectiveness and efficiency in providing transportation services. Finally, the US Federal Transit

Administration uses measures of effectiveness and efficiency including two to evaluate transit systems.

Board Effectiveness: Jackson and Holland (1998) offer a framework of six observable activities for measuring the effectiveness of nonprofit boards. These are *contextual, educational, interpersonal, analytical, political, and strategic* activities. Contextual activities examine the extent to which a board takes into account the culture, norms, and value of the organization it governs when making decisions. Educational activities ensure that the board takes necessary steps to make its members informed about the organization and the professions working in it as well as the board's roles, responsibilities, and performance. Interpersonal activities are designed to ensure that the board as a group is cohesive and attends to its own collective welfare. Analytical activities probe board preparedness to dissect complex issues, examine them from multiple perspectives to synthesize appropriate responses. Political activities measure board acceptance as its primary responsibility the need to develop and maintain cordial and healthy relationships between key constituencies of the organization they govern. Strategic activities are board ability to envision and shape the future direction of the organization. The overall assumption is that board effectiveness is determined by the extent to which its members are involved in the above activities to make its resource acquisition, strategic and control roles easy.

Axelrod (1994) lends support to Jackson and Holland's (1998) premise that involvement in certain board activities and processes will help boards become effective. Bradshaw and Wolpin (1992) found that a board's involvement in its organization's strategic planning and low level of conflict (group cohesiveness and good interpersonal relationships) are related to its performance. In a study of 16 nonprofit organizations, Green and Griesinger (1996) found that a board's developmental activities, training of new members, assignment of specific duties to each board member (service task), and self-evaluation were related to board as well as organizational performance.

Obeng and Ugboro (2005) found that board role performance is enhanced when a board is involved in contextual, analytical, strategic, interpersonal and political activities. Based upon these studies, it is hypothesized that, *Involvement by board members in prescribed board activities is negatively related to cost-based measures of organizational performance.*

Methodology

Sampling: Data to test this hypothesis come from a survey of a random sample of the 1999 US members of the American Public Transit Association (APTA). To account for regional differences the sample includes four transit systems from all states, with the exception of the states in the northeastern United States that have six transit systems each because they have high concentrations of transit systems. Another exception is that the data include all the systems in states with fewer than four transit systems. Also included are the transit systems of the large cities in North Carolina. From the web sites of these transit systems, information was collected on phone numbers, addresses, CEOs' names, and the names of the members that served on each system's board.

To update the addresses and the names of board members and to request participation, telephone calls were placed to the transit systems. Some declined to participate and were removed from the sample and not replaced. Others that no longer or never had Boards of Directors were also removed from the sample without replacement as were systems that were unwilling to give out the names of their board members. This process led to the final selection of 110 transit systems for the study.

Each board member was sent a letter explaining the survey's purpose and requested participation, along with a survey to complete and return in an envelope with postage prepaid. Three weeks after mailing the surveys postcards were sent to remind recipients to complete and return the questionnaires. This was done to increase the response rate. Of the 110 transit systems surveyed, 68 participated giving an effective rate of 61.9% and responses were received from 184 of their board members.

Organizational Performance Measures: The US annual Section 15 statistics list many unit measures of performance broadly characterized as showing efficiency, effectiveness and productivity. From the previous section of this paper and the reasons already given we use operating cost per passenger and cost per vehicle hour as the measures of organizational performance.

Board Effectiveness: Board effectiveness is determined by the extent to which its members are involved in the prescribed board activities (Axelrod (1994, Jackson and Holland 1998, Bradshaw and Wolpin, 1992, Green and Griesinger 1996). To repeat, these activities are contextual, political, analytical, strategic, educational and interpersonal. Item statements for these activities were developed and used in a questionnaire instrument for the study. The questionnaire is based upon a five-point Likert scale (1 =strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree) and the instrument is derived from the works of Forbes and Milliken (1999), Taylor et al. (1996), Green and Griesinger (1996), Jackson and Holland (1998), and Herman and Renz (2000). Contextual activities are assessed by nine item statements, whereas educational and interpersonal activities are measured by twenty-two and seven items respectively. Twelve, six, and eight item statements measure analytical, political and strategic activities respectively. The item statements for each of these constructs and the questionnaire are available upon request.

Factor Analysis: We use factor analysis to determine if the item statements form unique or multiple measures. The fit statistics are Chi-square (χ^2), its probability (p), and the Tucker-Lewis reliability index (TLI). Additionally Cronbach's alphas (α) are used to assess the reliability of the scales. The results show that analytical activities have two measures with fit statistics of $\chi^2 = 33.4775$, $p = 0.1487$, $TLI = 0.9607$. They are attentiveness to decision-making processes ($\alpha = 0.7292$), and openness to views ($\alpha = 0.6772$). Interpersonal activities are a one-factor construct ($\alpha = 0.6855$, $\chi^2 = 19.61$, $p = 0.1465$, $TLI = 0.95$), as are political

activities ($\alpha = 0.7833$, $\chi^2 = 11.27,\ p = 0.2575, TLI = 0.98$). Strategic activities on the other hand consist of three factors ($\chi^2 = 2.9262,\ p = 0.4031, TLI = 1.0$), which are periodic review of organization's mission ($\alpha = 0.8312$), use of long range planning priorities in decisions ($\alpha = 0.6766$), and discussions of future directions of the organization ($\alpha = 0.8721$). Educational activities have four measures ($\chi^2 = 25.7281,\ p = 0.3671, TLI = 0.9916$) which are participation in educational activities ($\alpha = 0.7473$), socialization of new members ($\alpha = 0.7502$), educational process itself ($\alpha = 0.6478$), and the existence of an educational process ($\alpha = 0.5604$). Finally, there are two measures of contextual activities ($\chi^2 = 26.5870,\ p = 0.1146, TLI = 0.9502$) and they are role congruency (α = 0.7116) and upholding the mission of the organization (α = 0.6288).

Control Variables: Control variables include how board members are selected, the roles of boards, the authority given to boards, criteria for selecting board members, who created the board, board composition, socio-demographic characteristics of board members, term limits for board members, types of modes operated and board compensation. Table 1 that presents the control variables shows that the respondents were mainly whites (76%) and males (76%), very well educated (16.74 years) and served on other boards (83%). Additionally, 40% agreed their transit systems had term limits, and most boards (69%) did not pay compensation to their members. Where compensation was paid it was quite small being $968 on the average.

Stepwise Regression Equations: Some modifications were made to the data. Using the factor analysis results the item statements of each activity were used to construct continuous variables using the equation, $v_{ji} = \sum_i w_{ji} x_{ji} \quad for\ \ i \neq j$ where, w_{ji} is a factor score of an item statement i of an activity j , x_{ji} is a respondent's rating of an item

statement i of activity j, and v_{ji} is a value of a constructed variable.

Table 1: Descriptive Statistics

Organizational Performance	**Mean**
Operating expenses per unlinked passenger trips ($)	3.11
Operating expense per vehicle hour ($)	72.01
Board Characteristics/Roles/Selection/Authority	
Number of Board Members	13.90
Proportion of African Americans	0.17
Proportion Whites	0.76
Proportion Male	0.76
Age (years)	53.63
Marital Status (married = 1, other = 0)	0.64
Years on the Board	5.88
Firms Paying Compensation (yes = 1, no = 0)	0.31
Service on other Boards (yes =1, no = 0)	0.83
Compensation ($)	968.06
Years of Education	16.74
Term Limits (yes = 0, no = 1)	0.40
Strategic oversight (yes = 1, no = 0)	0.90
Resource acquisition (yes = 1, no = 0)	0.66
Control (yes = 1, no = 0)	0.67
State government (yes = 1, no = 0)	0.44
Chief operating officer (yes = 1, no = 0)	0.13
Election by voting public (yes = 1, no= 0)	0.17
Approve strategic plans and decisions (yes = 1, no = 0)	0.91
Approve operating plans and decisions (yes = 1, no = 0)	0.91
Overrule plans and decisions (yes = 1, no = 0)	0.74
Initiate strategic direction or plans (yes = 1, no = 0)	0.84
State government created board (yes =1, no = 0)	0.54
City/county government created board (yes = 1, no = 0)	0.57
Privately owned (yes = 1, no = 0)	0.01
Criteria for Selecting Board Members	
Organization-specific knowledge (yes = 1, no = 0)	0.35
Industry-specific knowledge (yes = 1, no = 0)	0.24
Ability to help provide resources (yes = 1, no =0)	0.28

Where the factor analysis yielded one measure, as in the cases of political and interpersonal activities, a new composite variable was also constructed. These continuous variables and the control variables were those used in the stepwise regression analysis with cost per passenger and cost per vehicle hour as the dependent variables to test the hypotheses. At each step this method requires a reexamination of the variables already included in the model because of their relationships with the entering variables. The reexamination is done by calculating partial F test of each variable and that variable whose F test is not significant is removed. This is repeated until all the variables have been considered. This paper's criterion for variable inclusion in the stepwise regression is a probability level of 0.15.

Tests of Hypotheses

The stepwise regression results are shown in tables 2 and 3. They show that the variables explained 55.35% of the variation in cost per passenger and 34.87% of the variation in cost per vehicle hour.

Table 2: Organizational Performance: Cost per Passenger

Variable	Estimate	Std. Error	Pr > F
Intercept	5.7127	0.7013	0.0001
Board size	-0.0728	0.0200	0.0004
Selected by public voting	-0.5552	0.3293	0.0944
Help secure resources	-0.5031	0.2747	0.0694
Authorized to approve strategic plans and decisions	-1.5920	0.7994	0.0486
Authorized to approve operating plans and decisions	-1.4525	0.7898	0.0683
Authorized to initiate strategic directions or plans	1.1560	0.3753	0.0026
Transit board created by City or County Government	0.8547	0.2567	0.0011
Privately owned transit system	-2.7756	1.5190	0.0701
Educational: socialization of new members	0.4269	0.1509	0.0055
Strategic: use of long-range priorities	-0.2275	0.1200	0.0604
R Square = 0.5535			

Table 3: Organizational Performance: Cost per Vehicle Hour

Variable	Estimate	Std. Error	Pr > F
Intercept	0.1275	0.0207	<0.0001
Members selected for reasons beside organization-specific and industry-specific knowledge, and ability to help provide resources	-0.0180	0.0061	0.0037
Board created by state government	0.0129	0.0083	0.1247
Board created by city or county government	-0.0167	0.0084	0.0484
System funded by city or county government general revenue	-0.0125	0.0068	0.0686
Service on other boards	-0.0130	0.0073	0.0748
Compensation (Yes = 1, No = 0)	0.0198	0.0071	0.0062
Strategic: Periodic review of organization's mission	-0.0073	0.0040	0.0721
Strategic: Use of long range planning priorities	0.0086	0.0029	0.0035
Number of modes operated	-0.0133	0.0041	0.0016
R Square = 0.3487			

Only three board activities entered the equations and have statistically significant coefficients. In the equation for cost per passenger the two activities that entered are board educational activities in terms of socialization of new members and strategic activities in terms of use of long range priorities. Both activities have statistically significant coefficients but only the use of long range priorities has a negative coefficient and supports the hypothesis. In table 3 it is found that only the strategic activities in terms of periodic review of organization's mission and the use of long range priorities entered the stepwise regression equation for operating cost per vehicle hour. Both activities have statistically strong relationships with cost per vehicle hour, but only periodic review of organization's mission has a negative coefficient and supports the hypothesis.

Discussion

The results provide limited support for the hypothesis that involvement by board members in prescribed board activities is negatively related to cost-based measures of organizational performance. For the performance measure, operating cost per passenger, support is found only when board members are involved in the strategic activity of using long range priorities or objectives to guide their decisions. Its relationship with the use of long range priorities to guide board decisions is positive, thereby not supporting the hypothesis, and contradicting the relationship obtained between this same board activity and operating cost per passenger. If these two measures of organizational performance are used management should be cognizant of possible tradeoffs between them. The negative relationships obtained somewhat support the findings of Taylor et al (1996) and Herman and Renz (1997) that board performance is strongly related to organizational performance. Further, they show that when decisions of public transit boards are guided by the use of long range priorities, management is likely to find that transit systems are effective in serving users but not efficient in providing vehicle hours of service. When boards periodically review the missions of their organizations management is likely to focus on efficient provision of transit services, the primary mission of public transit systems. These results underscore the need for public transit boards to continue to emphasize behaviors that enhance strategic activities.

Besides strategic activities evidence suggests that board-sponsored educational activities in terms of socialization of new members have statistically significant positive relationships with operating cost per passenger. Educational activities have a lump-sum effect on cost and no bearing on output. They require organizations and their managers to plan meetings to give both new and existing board members opportunities to learn about the organization, its values, mission, culture, people and the professions represented in the workforce all of which increase cost. However, the value of educational activities cannot be assessed merely by looking at its possible increase in cost. They are designed to enhance board capacity to perform the strategic, contextual, service and resource dependent functions of the board. They give boards an opportunity to evaluate their performance

through experience and self-evaluation, and learn their appropriate roles and responsibilities. These capacity enhancing opportunities are invaluable to board performance.

Though not the focus of this paper, the results provide some indications about the desirable attributes of public transit boards of directors. These are those control variables whose coefficients are negative and statistically significant. Board size, the selection of board members by public ballot, the role of the board in helping secure resources and private ownership are associated with lower operating cost per passenger. Additionally, the authority of boards to approve strategic and operating plans and decisions are negatively related to cost per passenger. Complementing these results, cost per vehicle hour is negatively related to board members serving on other boards, the number of modes operated and city and state governments funding a transit system from general revenues.

Consideration should be given to increasing board size. More members enable transit systems to have people with different expertise to serve on their boards and for them to bring their expertise to provide different perspectives on issues. A larger board also allows more people who may have external links and access to resources and information critical to transit operations to serve. Criteria in selecting board members should be their ability to help acquire resources for the transit system and experience serving on other boards. Public transit boards should be given the authority to approve strategic decisions and plans, and approve operating plans because of the cost advantages associated with them that we found.

Conclusion

This paper tests the hypothesis that board effectiveness as measured by involvement in political, interpersonal, strategic, contextual, educational and political activities is negatively related to cost-based measures of organizational performance. The results provide little support for this hypothesis in that only two strategic activities are found to be negatively related to these measures of organizational performance. They are the use of long-range planning priorities to guide board decisions and periodic review by the board of the

organization's mission. But, even here, the result depends upon whether cost per passenger or cost per vehicle hour is used as the measure of organizational performance. Involvement by board members in some board activity, such as board-sponsored educational activities, is not costless to transit systems. It involves lump-sum expenditures and this may explain the finding of a positive relationship between the educational activity of socializing new members and operating cost per passenger.

Limitations: Even though the findings of this paper support the literature on corporate governance and organizational effectiveness somewhat, their generalization should be guided by two limitations. First, our use of the internal process approach does not reflect systems' outcomes such as customer or user satisfaction. Second, our assessment of board performance is based on self-reported data. While this data is fairly accurate, consistent and reliable across systems, an independent source, if available, would strengthen its validity.

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