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Agency Directors And Network Centrality: An Examination Of Resource Dependencies

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Abstract

A basic tenet of resource dependence theory is organizations must obtain resources from their environments in order to survive (Pfeffer and Salancik, 1978). According to the theory, there are several strategic factors that affect how organizations manage inter-organizational resource exchanges. These strategic factors include (1) interlocking of board of director members, (2) joint programs or joint ventures, (3) organization size, and (4) top administrator contacts with other organizations (Pfeffer and Salancik 1978: 143-69). Organizations engage in these activities to reduce uncertainty and to develop favorable linkages in interorganizational networks

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Agency Directors And Network Centrality: An Examination Of Resource Dependencies

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A basic tenet of resource dependence theory is organizations must obtain resources from their environments in order to survive (Pfeffer and Salancik, 1978). According to the theory, there are several strategic factors that affect how organizations manage inter-organizational resource exchanges. These strategic factors include (1) interlocking of board of director members, (2) joint programs or joint ventures, (3) organization size, and (4) top administrator contacts with other organizations (Pfeffer and Salancik 1978: 143-69). Organizations engage in these activities to reduce uncertainty and to develop favorable linkages in inter-organizational networks.

An interorganizational network is defined as an identifiable set of

organizations which are tied or linked to one another through specific types of resource exchanges (Aldrich, 1979; Lincoln, 1982). Prior research on interorganizational networks has focused on both coordination and differentiation of resource exchanges within various service delivery networks (Boje and Whetten, 1981). The present study examines the exchange of resources within an identifiable set of service delivery organizations. Specifically, we test the effects of engagement in coordinative activities such as administrator contacts, interlocks, joint programs and organization size on network power and dependence. In so doing, we strive to further clarify the role that organizational activities can have on network cen-

trality and thus further understand the process by which organizations can enhance their survival through acquisition of critical resources from the environment.

Interorganizational Network Centrality

Researchers have found centrality to be an important variable in the study of resource exchange networks (Hoffman, Stearns, and Shrader, 1990). Network centrality is defined as the extent to which an organization is the object or source of short, dense chains or relations among organizations (Lincoln, 1982). The shorter and more direct the paths, the greater the organization's centrality.

The implication of network centrality is dependent on the type of resource exchange under consideration (Shrader, Dellva, and McElroy, 1989). A central organization may be either powerful or dependent on other organizations in the network as a result of the flow of the resources being exchanged (Freeman, 1978/79; Mariolis and Jones, 1982; Oliver, 1990). If an organization is central in a network due primarily to the sending of the resources to other organizations, then it is considered to be relatively powerful because it is a source of resources for other organizations (Boje and Whetten, 1981; Ghoshal and Bartlett, 1990). If an organization is central in network due primarily to receiving resources, then it is considered dependent within the resource network (Pfeffer and Salancik, 1978).

Power, according to Pfeffer and Salancik, refers to the organiza-

tion's ability to control scarce information and resources. Beyond simple acquisition of resources, scarce resources are those that are difficult to obtain, and not all organizations are proficient or successful in securing them. By securing scarce resources, an organization reduces uncertainty and is more likely to survive. Centrality reflects the organization's position and relative success with respect to these critical resource exchanges (Rogers, 1974a).

Agencies in social service networks confront uncertain environments and consequently, strive for interorganizational coordination (Shrader et al., 1989). Studies of community service agencies indicate strong positive relationships between network centrality and resource dependencies (Aldrich, 1976; Rogers, 1974a). Theorists caution, however, that the substantive content of resource exchanges within a network must be considered before resource dependencies can be inferred (Galaskiewicz, 1985). The purpose of this study, therefore, is to examine the effects of the coordinative activities identified by Pfeffer and Salancik—interlocks, joint programs, director contacts, board size, and organization size—on substantive client and service exchanges in a youth service agency network.

Centrality and Interlocking Directorates

Pfeffer and Salancik hypothesize that organizations use boards of directors for "coopting important external organizations with which they are interdependent" (1978:

167). This coopting activity is referred to as an interlocking directorate and is argued to facilitate stable interorganizational resource exchanges. That is, interlocking directorates are viewed as means of linking organizations in which friendships can develop, communication can easily flow, and plans can be made. An interlock is thought to exist when a person belongs to the board of directors of two or more organizations (Pfeffer and Salancik, 1978; Pennings, 1980).

Prior research suggests that interlocks among organization directorates are fairly common in both the public and private sectors, but there is little in the literature that specifically explains the results of these coordinated activities. For instance, Pennings (1980) found that financially stable organizations were more likely to interlock their directorates with those of individuals serving on the boards of financial institutions. Pennings also found a strong relationship between interlocking directorates and network centrality. Mintz and Schwartz (1981) suggest that organizations engage in interlocks to gain access to critical financial information and other resources. Their study of Fortune 500 firms found the largest financial institutions to be most central in a network. They also concluded that resource exchanges were of lesser importance than joint ventures and director interlocks with banks. Pfeffer (1973), in a study of 57 hospitals, found that board members are chosen primarily to provide resource linkages between the hospital and important resource

suppliers in their network environment. Finally, Burt (1980) studied the interlocking behavior of manufacturing firms and found interlocking directorates to be important in achieving cooptive arrangements with other firms.

Fennema and Schijf (1978/79) argue that interlocks are best understood in the context of an interorganizational network. They state: "Network analysis is critical to the study of interlocks because it takes into consideration interconnectedness of organizations and whether some organizations are more central and have more strategic position than others" (1978/79: 332).

The literature suggests that formal interlocks through common board members with other organizations is an important method for obtaining resources from the environment. The more director interlocks, the more central the organization will be in the resource network (Pfeffer and Salancik, 1978). Therefore, it is hypothesized:

Hypothesis 1:

The number of interlocking directorates formed by an agency will have a positive effect on the network centrality of the agency in exchanging services and clients with other agencies.

A positive relationship between the number of interlocking directorates and centrality in a resource sending network would imply that the agency has acquired power by virtue of an ability to initiate an exchange with numerous organizations (Boje and Whetten, 1981). Failure to confirm the hypothesis, on the other hand, would suggest that centrality as an outcome of an

ability to initiate exchanges with numerous agencies does not necessarily lead to power within a network.

Centrality and Joint Programs

Pfeffer and Salancik cite several variables that are of critical importance in understanding how inter-organizational relations can be managed. One of the most important of these is joint programs or joint ventures. Joint programs are purposive actions undertaken by agencies facing similar issues in order to meet common objectives (Aiken and Hage, 1968). Joint programs can be used, for example, to reduce uncertainty and risk surrounding the delivery of various services and the acquisition of scarce resources through the formation of temporary alliances (Aldrich, 1979).

Aiken and Hage (1968) examined the effects of joint programs on organization structure, and found that social service agencies offering many joint programs had organic, highly complex structures supplemented by an increase in professional staff. Pfeffer and Nowak (1976) in a longitudinal study of manufacturing and gas and oil exploration firms found that joint ventures and joint activities usually occurred among firms operating in similar industries. Aldrich (1979) has noted that joint programs are common among human service agencies and offer economic, technical, and cooperative benefits to those organizations involved.

The level of research on joint program activity in the context of resource exchange networks has

been sparse. However, resource dependence theory does suggest several hypotheses that can be tested. Organizations engaging in joint programs are likely to enter this form of coordinative activity in order to secure an adequate flow of those critical resources. Therefore, joint programs should be found to be associated with network centrality as an outcome of resource dependence. It is hypothesized:

Hypothesis 2:

The number of joint programs will have a positive effect on the centrality of the agency in exchanging services and clients with other agencies in the network.

A positive relationship would imply that the agency has been successful in coordinating and controlling the flow of resources in the network.

Centrality and Administrator Contacts

As previously stated, interlocking directorates is an organization's attempt to coordinate activity with another organization. However, an agency's top management may also engage in other activities that facilitate the flow of resources in a network. Aldrich (1979) suggests that agency administrators may serve on boards of other organizations in order to obtain important information for their organization. Whetten and Aldrich (1979), in a study of human service agencies, found that administrative heads of agencies engaged in boundary spanning and had influence over many cooperative inter-organizational relations.

Resource dependence theory posits the administrator's role to be that of representing the organiza-

tion to the environment. Organizations needing many critical resources will have many contacts among top managers. Frequent levels of director contact within a resource network indicates an agency's assessability to other agencies with respect to resource exchanges.

Therefore, the frequency of administrator contacts should be associated with the organization occupying a central position in a network without specific regard to power or dependence. Director contacts serve to link organizations in a general way (Rogers, 1974a). Therefore, it is hypothesized:

Hypothesis 3:

The number of informal contacts agency directors have with administrators of other organizations will have a positive effect on the centrality of the organization in exchanging services and clients in the network.

Centrality and Board Size

Pfeffer and Salancik state that the size of the board of directors is a function of the organization's attempt to establish favorable linkages with the environment. Larger boards are used to facilitate growth through the boundary spanning activity and to increase the potential for interlocks with other firms. In the private sector, a large board is more visible, can interlock with financial firms, and can bring in useful environmental information.

Agency boards are composed mostly of members who are appointed to the board by public officials, and who are considered to be beneficial to organizations facing environmental pressures. Large

board size should give an agency a relative advantage in the network. It is, therefore, hypothesized:

Hypothesis 4:

The larger the board of directors, the greater the centrality of the organization in resource exchange networks.

Centrality and Organization Size

Pfeffer and Salancik argue that large organization size will "render the organization more visible, requiring more social support. Also large size probably means the organization would have larger financial requirements which might also increase dependence on the local environment" (1978: 171). Using this argument, large agencies probably will be dependent on the network for client referrals and for help in administering services. Large size, therefore, should be positively associated with receiving resources in the network.

Hypothesis 5:

The larger the size of the organization, the greater the centrality of the organization in the receiving of resources in a network.

METHODOLOGY

Sample

The sample for this study includes 52 non-profit agencies that deliver counseling, health, and religious services to youth in a large metropolitan area. The agencies are linked together through information exchanges, youth service support, and client referral networks. The agencies were also actively engaged in interlocking, joint programs, and other board activity.

The specific agencies were identified through direct contact with agency directors and through social service directories. The conceptual boundary of the network was thereby identified, as were specific agencies. As a result, 53 agencies were targeted for study, and 52 complied and granted interviews with the top agency officials.

The interviews involved a one hour in length data gathering meeting with each agency's director—the top agency administrative official. The directors all considered their agencies to be part of this interorganizational network. The interviews were pilot tested prior to the study.

The study examines the exchange of critical resources among a network of human service agencies. The term "network" refers to the methodology employed on the sample, while "resource exchange" is a descriptive term regarding activities among organizations in the network. Client referrals and services rendered to clients are the critical resources exchanged by these agencies. Clients and services are the basic raw materials of the agencies and are the basis upon which affiliation with the network is drawn. Moreover, the exchange of clients and services comprises the essential strategic activity for the agencies which serves to legitimize the organization and attract outside funding (Provan, 1984).

Dependent Variables

The dependent variables for this study are four measures of centrality derived from the 52 agencies that form an interorganizational

network of relations. The four measures are: 1) services sent centrality, 2) clients sent centrality, 3) clients received centrality, and 4) services received centrality. Centrality is determined by the number of relations or links necessary to contact other agencies in the network. It is calculated from the ratio of the total number of links among agencies in a network over the sum of the links of each individual agency. Thus, the greater the total number of links among all agencies in the network (numerator) and the fewer the number of links it takes a particular agency to reach others in the network (denominator), the more central the agency (Lin, 1976). The most central agency is one that requires relatively fewer links to contact the other agencies in the interorganizational network. An agency occupying a central position in the exchange of clients and services is essentially "closer" to other agencies in the network.

In this study, centrality was calculated from the choices made by the top-ranking agency administrators relative to the client and services exchanges in the network. In other words, agency administrators were asked to nominate the agencies with which they exchanged services and clients. Specifically, each of the 52 administrators were asked to list the agencies:

- to which they sent services,
- from which they received services,
- to which they sent clients, and
- from which they received clients.

The administrators surveyed were the top-ranking agency officials

and were identified as those most capable of representing the agency with regard to these resource exchanges (Provan, Beyer, and Krutbosch, 1980).

The administrators' nominations were analyzed using Marsden's (1976) "Digraph" network analysis program. The calculation of centrality was based on the ratio of the total number of relations among top administrators to the number of relations for a specific agency. The closer or more accessible an agency was to others in the network, the greater the centrality of that agency.

There are a number of measures of network centrality in the literature, each with an associated substantive meaning (see Freeman, 1978/79). Some measure "equivalence," some measure "betweenness," and some "closeness." Our purpose is not to review them here. However, the "Digraph" measure of centrality was chosen because it identifies which organizations are "closest," in a relational sense, to others in the network for specific types of relations. If an organization has close client or service ties with other organizations—in other words—is "more central," then the organization is substantively more important in the network; and power and dependence can be inferred (Oliver, 1990).

Therefore, a fundamental principle of network analysis is that power can be inferred from the patterns and from the content of exchange relations (Blau and Alba, 1982). This principle is supported in several studies which demonstrate that centrality is a surrogate for power (Boje and Whetten,

1981; Fombrun, 1983). Another principle that is of critical importance in understanding the nature of resource exchanges is the direction (sent or received) of relations. Lincoln and McBride (1985), in a study of human service agencies, found direction or asymmetry of interorganizational ties to be an important predictor of resource dependencies. Therefore, the dependent measures in this study indicate both the content and direction of relations.

Two of the measures, services sent and clients sent centrality, are indicators of network power. Services and clients are valued resources and agencies that have options to send them are powerful (Provan, 1983). The direction of the exchange relationship (sending) is important. Organizations which send services are providing knowledge and expertise to other organizations in the network, and are, therefore, powerful (Levine and White, 1961; Weinstein and Moravec, 1977; Provan et al., 1980). Examples of services exchanged included workshops, training, advice, and counseling.

Likewise, agencies which send clients to other organizations are powerful (Rogers 1974a, 1974b). Clients are the raw material and primary resource of the agencies (Provan, 1984). An agency that sends these resources to others will be perceived by directors to be influential.

Centrality in receiving clients denotes dependence because an agency, in this case, must rely on others in the network to secure (receive) scarce valued resources. By becoming central with regard to re-

ceiving clients, an agency attempts to reduce risk, uncertainty, and increase legitimacy (Pfeffer and Salancik, 1978; Provan et al., 1980).

Centrality in receiving services also indicates dependence (Weinstein and Moravec, 1977). Consideration of the type and direction of the relation again indicates the type of interdependence involved. Agencies named as receiving many services are clearly dependent on others in the network for information and expertise. Therefore, there are two centrality measures dealing with power and two dealing with dependence. The four centrality measures are the dependent variables and are defined as follows:

Services Sent—Centrality in the services sent network. The types of service included counseling, professional advice, technical and medical information, and other types of youth service.

Services Received—Centrality in the services received network. This measure was also obtained from the director interview where each director was asked to name agencies from which services were received.

Clients Sent—Centrality in the client referral network. An agency that has the ability to send valuable resources to other agencies is in a powerful position in the network. The measure was obtained from the interview question: "To what agencies do you refer clients?"

Clients Received—Centrality in the clients received network. This measure taken from the interview denotes the agency's position with

respect to obtaining scarce resources.

Independent Variables

The independent variables for this study were also obtained from the agency director interviews. The variables are as follows:

Interlocks—This is the number of formal interlocking directors for each agency. A list of board members was obtained from each agency and the number of interlocks were simply counted. The interlocks were what Pennings (1980) calls general interlocks, where a given director sits on the board of two or more agencies. This method of counting interlocks is common in the literature (e.g., Fennema and Schijf, 1978/79; Marolis and Jones, 1982).

Joint Programs—This independent measure indicates the degree to which agencies are linked through joint programs. Agency directors were asked to cite other agencies with which there was interorganizational coordination through joint programs and regular meetings. Examples of joint programs included employee training and client treatment programs. The measure represents the number of joint programs with other agencies in the network for each agency. The number of programs was verified through agency records.

Administrator Contacts—This measure indicates the number of informal administrator contacts for each agency. The top agency officials were asked to name the administrators of other agencies within the net-

work with whom frequent contact, telephone conversations, and other correspondence were made.

Board Size—This is the number of members of the board of directors for each agency. A formal list of board members was obtained from each agency.

Size—This is simply the number of full and part-time employees in each agency obtained from the director interview and verified through agency records. While there are many issues involved in measuring organization size, this measure is consistent with interorganizational literature (e.g., Boje and Whetten, 1981).

Ordinary least-squares regression was the statistical technique chosen to test the relationships hypothe-

sized. Regression was chosen because it allows for the examination of the specific effects of each of the five independent variables on each of the four dependent measures.

ANALYSIS AND RESULTS

Zero-order correlations, means, and standard deviations for the study variables are given in Table 1. The client exchange networks exhibited the greatest standard deviations of the dependent measures, indicating that the exchange of clients varied more than that of services in the network. Interlocks, joint programs, and administrator contacts have small means compared to the standard deviations. This indicates that some of the 52 agencies had little director activity

TABLE 1

Means, Standard Deviations, Correlations

Variable	Mean	Dev.	Service Sent	Service Rec.	Client Sent	Client Rec.	Interlocks	Joint Prog.	Admin. Contact	Board Size
Service Sent	52.05	1.84								
Service Received	52.01	1.42	.00							
Client Sent	54.40	10.55	.20	.20						
Client Received	56.93	16.76	.18	-.30	.18					
Interlocks	.92	1.45	.35	-.15	-.19	.26				
Joint Programs	1.31	1.93	.04	.41	-.12	.04	.07			
Administrator Contact	1.73	2.00	.31	.04	.21	.35	.04	-.03		
Board Size	9.96	11.42	-.05	-.06	-.09	-.05	.21	.08	.02	
Agency Size	20.73	33.78	-.09	-.12	.09	.34	.14	-.05	.36	.02

but others were heavily engaged in interlocking, joint programs, and administrator contacts. The correlation matrix showed little intercorrelation among the variables.

Table 2 presents the standardized regression coefficients and R^2 s

for the four regressions. When the dependent variable services sent was regressed on the independent variables, the result was a significant R^2 (.30). The adjusted R^2 for services sent was .23. With the exception of board size, the coeffi-

TABLE 2

Standardized Regression Coefficients

Dependent Variables	Interlocks	Joint Programs	Administrator Contacts	Board Size	Agency Size	R ² (Prob>F)
Service Sent	.40**	.02	.41***	-.14	-.29**	.30 (.004)
Service Received	-.16	.43***	.11	-.06	-.12	.23 (.032)
Client Sent	-.18	-.09	.20	-.05	.04	.10 (.433)
Client Received	.24*	.06	.27*	-.11	.22	.24 (.023)

* p < .05
 ** p < .01
 *** p < .001

clients were all in the hypothesized directions. Therefore, the independent variables were good predictors of power in terms of sending services in the network.

The prediction for services received was also significant with the R² and adjusted R² being .23 and .14, respectively. Joint programs and director contacts had coefficients in the hypothesized direction. The other variables were not found to be associated in the hypothesized direction, though the coefficients were small.

The equation for clients sent was the weakest of the four (R²=.10). The largest effect was for administrator contacts, and this was also the only coefficient that indicated association with clients sent in the hypothesized direction.

The R² for the dependent variable clients received was .24 and was significant. All independent variable coefficients, except board size were in the hypothesized direction. Board of director and top agency administrator activity

served to increase the ability of the agency to receive resources.

Therefore, three of the dependent variables resulted in good predictions and all of the significant regression coefficients were in the predicted directions. This indicates that the coordinative activities proposed by Pfeffer and Salancik do indeed link the organization with its environment according to resource dependencies.

Support for the hypotheses can be determined by examining the standardized coefficients. It was hypothesized that interlocking directorates would increase network centrality for the four substantive relations. Interlocks were significant positive predictors of services sent (.40) and clients received (.24) centrality. The other two coefficients were not in the direction predicted but were not significant. Therefore, there is support for hypothesis one. Interlocks were found to link the organization with those powerful agencies in sending services and receiving clients.

The number of joint programs was found to be significantly associated with services received (.43). This indicates some support for hypothesis two. Joint programs were common among agencies dependent on others in the network for the delivery of service. There were no associations of any note between joint programs and indicators of resource control. Thus, joint programs were found to occur among less powerful agencies who did not or could not offer full service to clients.

Contact among the top administrators in the network was also a strong predictor of services sent and clients received (.41 and .27, respectively). The informal contacts served as boundary spanning activity in securing resources for the agencies. This is as predicted by hypothesis three. For the services received and clients sent measures, the coefficients were fairly large but not significant, which further corroborates the hypothesis.

Hypothesis four was not supported. Board size was not associated with either client or service centrality. Furthermore, the coefficients were all in the opposite direction. Large boards did not put the agencies in strategically central positions in the network.

Hypothesis five had partial support in the finding that large size was negatively associated with services sent centrally. Size was hypothesized to be associated with dependence, and while services sent indicated power in the network, the negative relation denoted that large size decreased services sent centrally. However, it was expected that size would have a po-

sitive association with services received, but this was not the case. The clients sent and received coefficients also were not in the hypothesized direction. Particularly puzzling is the strong but not significant relation with clients received. Large organizations were central in receiving client resources. Therefore, the size findings are mixed and there is no clear indication that size leads to power or dependence.

The best overall predictors were interlocking directorates and administrator contacts. Top agency management affected interorganizational resource dependencies to a great degree. Board size, on the other hand, did not appear to be of much importance to human service agencies. Joint programs was a strong predictor of only one dependent variable. As with other organization theory research, findings with regard to size were difficult to explain.

SUMMARY AND CONCLUSIONS

Pfeffer and Salancik attribute interorganizational influence to important resource exchanges, and assume that these exchanges must be managed to ensure organization effectiveness. They argue that organizations will develop relations among boards of directors to negotiate or manage their environments. Moreover, they consider joint programs, sharing board members, and organization size as important exchange factors. The results of the present study indicated that these strategic relations were important predictors of interorganizational centrality measures.

Much of the organization theory literature indicates that coordination by important actors such as directors is critical to the survival of the organization (e.g., Aldrich, 1979). Indeed, resource dependence theory makes this argument explicitly.

Supportive of the theory was the finding that interlocking directorates were strongly related to centrality in interorganizational resource exchanges. We learned that interlocks were strategically used to link organizations with their environments. Further research should specifically address the effects various types of interlocks have on power and dependence.

Resource dependence theory propositions with regard to joint programs as strategies for managing resource dependencies were also warranted. This study found that joint programs constituted a response to dependence in the network. Future studies should attempt to identify which specific joint program activities indicate power and which indicate dependence.

The resource dependence notions related to administrator contacts and organization size had some support by the findings. Director contact was related with measures of resource control, while size indicated both power and dependence relations. Indeed, size may be a surrogate for success as suggested elsewhere in the literature (e.g., Aldrich, 1979); or the larger the agency size the more the boundary spanning staff that can serve to link the agency in the network. We can conclude, for net-

work of youth delivery agencies such as this, that large size merely indicated a high volume of service and clients processed, and was independent of relative interorganizational influence.

Three of the four dependent variables resulted in relatively good predictions. Clients sent, however, did not. It does, however, present an interesting caveat. We inferred network power from the ability to send clients to other agencies, as suggested by previous empirical work (Provan, 1984). While this may indeed be the case, others have argued (such as Hall, 1987: 232-233) that clients could be sent to other agencies because the focal agency lacks the expertise to provide the service. In the latter case, the interorganizational relation would indicate a form of dependence. Future research that refines the measurement of the content and direction of interorganizational exchanges is necessary for this issue to be resolved.

The basic argument that the board of directors is used by organizations to provide linkages with the environment is supported by this study. The board serves to link the organization through various types of relationships, and put it in a strategically important position in the network. Thus, within the constraints posed by resource dependencies, directors negotiate central positions for their organizations. This underscores the critical importance of the director's role in organizations which function in networks marked by resource dependent relationships (Pfeffer and Salancik, 1978).

This study found that interlocks,

administrator contacts, and joint programs increased in the organization's centrality in a network. If, indeed, central organizations can coordinate activity better than others, this improved coordination can lead to better service at lower costs. Thus, agency board members and directors can use these principles in examining and establishing their interorganizational relationships.

However, several assumptions relative to board membership are inherent in this research. It is assumed that board members are homogeneous with respect to the role they fill for the agency. That is, that they are active in representing the agency on whose board they are serving, and that they make decisions in the agency's best interest. Additionally, this research assumes that members of boards are at least initially equal in power and ability to participate on the board. It is possible, however, that board members act in their self interest and are appointed merely for political reasons. While these alternative explanations for board member activity are not controlled in this study, we feel that the findings are likely to be robust to them. We feel that important strategic linkages among directors and the consequences of these linkages have been examined, regardless of the underlying motivation. Future research should more explicitly address these assumptions.

Managerial Implications

This research should prove useful to managers and directors in a variety of industries, primarily because as environments become

more uncertain and resources more scarce, interorganizational linkages are sure to increase. If this pattern holds true, directors and managers can develop linkages to more adequately ensure access to critical resources. The system for developing these linkages involves these steps: scanning the environment and identifying critical resources, activating top managers and directors, and evaluating the results of the linkages.

Scanning the Environment—The first step in developing linkages is environmental scanning. Scanning should be used to identify sources of critical resources and what activities facilitate the acquisition of these resources. For the agencies in this study, the critical resources were clients and services. In other industries, critical resources might include raw materials, highly trained personnel, financial resources and venture capital, or information on markets, demographics, competitors, and technological developments. Identifying critical resources may be straightforward and obvious. However, identifying the activities that lead to securing them may not. For the agencies in this study, interlocks and administrator contacts facilitated the exchange of both clients and services; while joint programs helped in gaining access to services. In other industries, simple contact among managers may be enough to accomplish access to raw materials or personnel. However, more complex forms of coordination may be necessary to acquire venture capital or critical information. For example, joint programs may provide a logical means for sharing

capital, labor, and technological expertise with another organization. Interlocks may potentially provide critical information on markets, technology, or demographics in an industry through the sharing of information among directors. All in all, environmental scanning should help managers identify opportunities for securing resources.

Activating Top Managers and Directors—Once potential linkages to secure resources have been identified, managers and directors should be encouraged to fill their entrepreneurial role and participate actively in them. Board members should be urged to sit on boards of organizations that supply or use the resources of their organization. Managers should be encouraged to communicate with the managers of organizations that exchange resources. A steering committee of the board of directors should be formed to make specific

assignments, set up conferences, and in general, oversee and coordinate these linkages.

Evaluation of Results—Finally, managers and directors should evaluate their performance relative to these linkages. The steering committee should be put in charge of this. The evaluation should center on the themes identified in this study. In other words, managers and directors should ask questions such as: how central is our organization in the exchange of resources? What organization is most central in our industry? How did that organization become most central?

If the organization has been successful or central in developing linkages, the access to critical resources should be relatively stable, and the probability of the organization's survival should be greatly enhanced.

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