

Managers network in the Norwegian fishing industry do organizational size and structure matter?

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Abstract: Managers play an important role in strategic decision making. One important objective of strategic leadership is that of linking the organization to its environment. In this paper we ask the question: To what degree are managers' external network contingent on organizational design, i.e. the internal characteristics of the organization? With the assumption that managers' networks are purposively created within the limits and the needs of the organization, we discuss what determines the range of network of managers. We find that size and vertical differentiation are the most important of the tested organizational characteristics, while horizontal differentiation had somewhat less influence. We did not find support for the hypothesis that administrative capacity contributes positively to manager networks. Our results indicate that to view organizational characteristics as conducive to managers network range is a fruitful approach.

Keywords: network range, fishing industry, network antecedents

1. INTRODUCTION

Managers, on different hierarchical levels are important for their firms by coordinating work and lead the organization towards its goals. Managers on the top level can be said to be of particular importance as their actions are significant in explaining organizational performance, compared to managers on middle-management and operator level (Lord & Maher, 1991). One aspect of leadership roles is the external role – that of linking the organization to its environment (Mintzberg, 1973). In making contact with the company's external environment, managers acquire resources and information that may prove vital for the organization. Through their actions managers, over time, build an external network. Whereas research has focused on the outcome of networks (Uzzi, 1996; Uzzi, 1997) we find relatively little research on the antecedents of networks. As managers have limited time and resources and act within the frame of their organization we find it interesting to explore: To which degree are managers' external network contingent on internal characteristics of the organization?

In exploring the research question we develop a theoretical perspective which builds a rational model (Pfeffer, 1982) where we see managers' network as purposively created within the limits and the needs of the organization. Hence, characteristics of the organization may influence the managers external network. We thus take an approach where leadership is seen as created within organizational borders. We thereby exclude personalized theories of leadership based on recent research which shows that the impact of managers personality on performance varies with conditional factors (Fiedler, 1996). In our framework we

therefore maintain a view where leadership is created within organizational structure.

The paper is organized as follows: In the next section the concept of network is explored and we argue with basis in prior research why we find the range of the network to be an interesting dimension to study. In section three the theoretical perspective is developed and we argue that organizational dimensions are related to managers' network range. Three hypotheses are presented. Section four contains data and methods. The results are presented in section five. A discussion follows in section six and a conclusion is presented in section seven.

2. NETWORKS - FOR WHAT?

Why would organizations strive to become embedded in external relations - and why do topmanagers construct a network of external contacts they interact with on a regular basis? Organizations need to scan their environment for retrieving information about changes that may influence their business (Fahey et al 1981). Scanning may involve a social process, particularly when managers interact with external actors like customers, suppliers, competitors, banks, the political system and R & D milieus. Mintzberg (1973) showed how business managers spend much of their time keeping in touch with actors outside the organization. Mintzberg portrayed the "1 role - establishing a web of external relationships - as a key part of the manager's job linking the organization to its environment:

"The manager may be likened to the neck of an hourglass, standing between his own organization and

a network of outside contacts, linking them in a variety of ways. External contacts generally consume one-third to one-half of the manager's contact time. These are of great variety and include clients, suppliers, associates, peers, and others. These people serve, in effect, as a network of informers. Nonlinear relationships are a significant and complex component of the manager's job." (Mintzberg, 1973: 52).

The relations managers develop towards external actors are dyads where two parts may exchange information and resources. When exchanging, the two parts learn about each other's capabilities and needs, and hence they utilize and strengthen the interdependencies of their activities (Håkansson & Johanson, 1993: 40). This circular causality between the exchange and the activity may be influenced by external contacts. Applied here, when an external organization makes contact with the manager in the focal organization, with the objective of making an alliance, this external influence affects the exchange between the two parties (e.g. exchange of vital information) which again may lead to a higher activity interdependence (e.g. they may develop a mutual agreement). In this sense we view managers' network as a structure of relations that has emerged over time. In changing environments this network structure is likely to be dynamic and vary with the managers' actual needs and the influence actors in the environment may have on him. A network consists of several dyads of external contacts. The managers' network consists of both relations initiated from the focal organization and from external sources to the organization.

In network research there is a common thesis that "better" networks yield "better" access to resources. But what constitute a good network? In a study of entrepreneurs Reese tested the following dimensions: *network size* and *time spent* developing and maintaining a personal network, but the results did not support that these dimensions improved access to resources (Reese, 1992). This indicates that having a large network does not necessarily imply a great flow of information and resources. Burt says it like this:

"Size is a mixed blessing. More contacts can mean more exposure to valuable information, more likely early exposure, and more referrals. But increasing network size without considering diversity can cripple a network in significant ways. What matters is the number of nonredundant contacts. Contacts are redundant to the extent that they lead to the same people, and so provide the same information benefits (Burt, 1992: 17).

Non-redundant, or novel information is a central resource emerging through networks (Granovetter, 1973). A concept that is likely to account for redundant information is range, defined as the degree of diversity contained in a personal network (Burt, 1982). A study of entrepreneurs in the Norwegian aquaculture industry showed that range, and not

size was significant in explaining access to resources (Foss, 1994). This indicates that the value of a network may not lie in having contact with many people, but to have contact with a broad array of people who occupy different statuses, because that secures that each contact may contribute with qualitatively new or different information. To have a network with a narrow range of contacts may confirm one's beliefs and mental models, whereas a network with a larger range may give information that broadens or transforms a manager's perception of the company's external environment. In a study of how the interorganizational networks of young companies affect their ability to acquire the resources necessary for survival and growth, Stuart et al (1999) found that firms with prominent alliance partners and organizational equity investors go to initial public offering faster and earn better evaluations at them than firms that lack prominent alliance partners. The study also shows that much of the benefit of having prominent affiliates stems from the transfer of status that is an inherent byproduct of interorganizational associations. Research also shows that a large and diversified network promotes learning by modelling and cognition (Bø, 1993). A wide range network captures actors with a variety of different statuses, and hence may incorporate a high degree of actors with different views, roles and possible resources.

In taking the position that managers' network range is of importance for producing novel information and various resources, it is now time for pointing out which set of actors constitute a business manager's network. Managers, in forming the strategic apex of the organization, are charged with ensuring that the organization serve the needs of those people who control or otherwise have interests in the organization, such as owners, government agencies, unions, and pressure groups (Mintzberg, 1979:25). In focusing on business organizations, we also include suppliers, customers, competing and non-competing firms. These are central actors in the firm's value chain that firms exchange information and resources with. Other relevant groups of actors is the political and administrative sphere, which lay premises for business organizations through regulations. Trade unions are important, as the manager is in charge of employees. R & D milieu may be important in as far as consulting and input from universities and research companies are used. The groups of actors are illustrated in Figure 1.

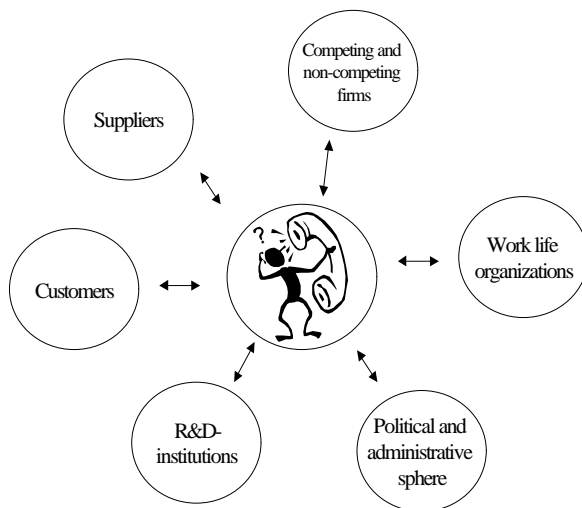


Figure 1 Important external actors in managers' network.

3. THEORETICAL PERSPECTIVE AND HYPOTHESES

What induce people to have a wide network range? Sociological studies have shown that individual characteristics such as socio-economic status and education are positively related to a person's network size and network range (Campbell, 1988; Marsden 1987). Also when it comes to network composition education has the effect that the more educated a person is the more members with higher education is included in the network (Campbell, 1988), and the more colleagues are included in the network (Poel, 1993). The lower social status and class relationship a person has the higher relative size of family and kin relations (Fisher, 1982; Marsden; 1987; Poel 1993). Although this research, which are based on large national data bases, seem to have established a clear pattern that education matters for the range of a person's network range, we do however not know how business managers are affected by their education as they enter the position as top managers, many after years of work experience in the same firm or other firms. Another issue that may be of importance is that managers' network range are likely to be formed by the organization they manage. Organizations have, by their structure, a potential for forming behaviour. We take the position that the impact of managers education on their network range might be overshadowed by the setting in which the organization operates, how adaptive the manager is to changes in the environment and how he fulfills the organization's needs concerning external resource acquisition.

We therefore turn from an individually based perspective to an organizational perspective in developing arguments for predicting variation in managers' network range. We find it meaningful to view characteristics of the

organization as "triggers" and we want to theorize how organizational structure may affect managers' ability to perform the external part of the leadership role. Our perspective is clearly in line with structural contingency theory (Pfeffer, 1982), in the sense that we see organizational behavior (top-managers networking) as contingent upon organizational context and structure. The main hypothesis in this perspective is that those organizations that have structures that more closely match the requirements of the context are more effective than those who do not (Pfeffer, 1982:148)¹. Applied to our agenda we could say that organizational behavior in terms of external networking is likely to be affected by the context and structure of the organization. In the following we focus on one dimension of the organization's context; that is the organizational size, and three elements of the organization structure.

The reason for selecting one contextual and three structural dimensions in developing the conceptual model is that they altogether represent complexity in organizations. With increasing organizational size, and increasing vertical and horizontal differentiation the organization becomes more complex and is presented with problems of control, communication and co-ordination (Hall 1982). Variety in these dimensions may therefore constitute different organizational conditions and needs which managers base their networking on. The range of the network the manager develops is thus assumed to be contingent on how the organization is structurally formed. The range of managers' network is assumed to match what the organization is capable of handling. The rationale in this contingency approach is that it is no special network range that is "effective" for organizations in general. A large network range may be suited to organizations where the complexity is high, because large and complex organizations demand a higher variety in information gathering and resource acquisition. When we expect a lower network range for smaller and less complex organizations we do that because we think that such organizations have a structure that permits less external orientation of the leadership role, and that their needs for a wide range network is less predominant. The conceptual model is shown in Figure 2 below.

¹ In contingency theory there are three central conceptualizations of an organization's context: Size, technology and environment (Pfeffer, 1982). In this paper we only use the first aspect, the size of the organization.

Organizational context and structure

Top leader's external leadership role

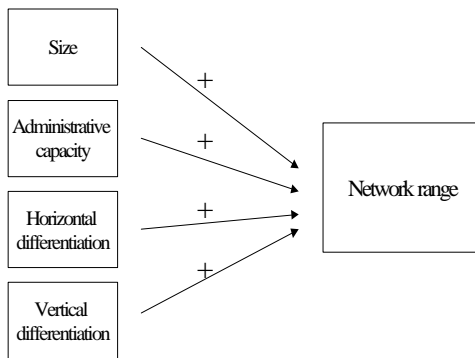


Figure 2 Conceptual model of the relationship between organizational characteristics and external leadership role.

In the next section hypotheses based on this conceptual model are developed.

3.1 Organizational size

Organizational size has been a classic dimension in organization research. Size can be defined as "the scope of an organization and its responsibilities" (Blau, 1972:3). However, size is also a troublesome concept with scarce theoretical attention (see Kimberley, 1975 for a review). There seem to be two trends in the literature; one trend sees size as a structural characteristic of an organization. This line follows Weber (1947) who argued that bureaucratic elements emerged in larger organizations. Another trend, which we follow here, is the contingency perspective where size is seen as one of the elements of the organizations context that has been investigated as decisive for organizational structure. Research has shown that size is one of the main factors in predicting specialisation (Pugh, Hickson & Hinings, 1969) and organizational control strategies (Child, 1973; Meyer 1972). As organizational size seem to affect specialisation and control strategies it is plausible that it may affect the need for a more comprehensive network strategy too. It is reasonable to assume that managers in larger organizations need a larger network range due to the complexity that follows organizational size. The larger the organization is, the more diverse information from the environment is needed. This may require a broadly ranged network where the manager builds relations to a variety of actors. We also assume that larger organizations play a significant role in their local community, in their industry and towards governmental agencies. External organizations, firms and institutions may therefore find larger organizations more important and hence play an active role in contacting managers in such organizations. Our hypothesis is therefore:

H1: Managers in larger organizations will tend to have a wider network range than managers in smaller organizations.

3.2 Administrative capacity

In the contingency literature the size of the administrative functions of the organization has been a structural dimension under investigation. A sufficient administrative capacity means that the responsibility for various administrative tasks are left to an administrative staff, so that the manager is left with less routine work and have time for more strategic leadership. But before the organization reaches a size where the administrative division of labour is significant, the distinction between administration and leadership can be blurred. Mintzberg shows this in the following way:

"As the organization grows, however, and adopts a more complex division of labour among its operators, the need is increasingly felt for direct supervision. Another brains - that of a manager - is needed to help coordinate the work of operators. So, whereas the division of labour up to this point has been between the operators themselves, the introduction of a manager introduces the first administrative division of labour in the structure - between those who do the work and those who supervise it. And as the organization further elaborates itself, more managers are added - not only managers of operators but also managers of managers. An administrative hierarchy of authority is built" (Mintzberg, 1979: 18).

In very small organizations therefore, there is unlikely to be administrative personnel besides the manager/owner. In very small firms the manager does the administrative work him/herself. The size of the administration may also vary with industry. In this paper we are dealing with an industry that is somewhat different from many other industries: the administrative personnel only counts 14 % its work force compared to 28 % in other industries.

We assume the following relation between the administrative capacity and the organization's external network: Organizations with high administrative capacity may have a basis for handling the demands from actors outside the organizations as well as actively seeking help from outside when needed. In organizations with low administrative capacity the manager is likely to spend relatively more time on administrative duties and routine work, and the time for strategic planning and developing and maintaining external contacts may be less. So the relative size of the administrative component of an organization may affect the time available for managers' networking. Further, high administrative capacity may also be effective in assisting the manager in planning external contact and by spreading and anchoring external

information to relevant groups within the organization. The hypothesis therefore is:

H2: There will be a positive relationship between the administrative capacity of the organization and the managers' network range.

3.3 Vertical differentiation

Vertical differentiation refers to the number of hierarchical levels in an organization, that is the depth of the hierarchy. The theoretical thought behind the concept of vertical differentiation is that authority is distributed in accordance with the level in the hierarchy; that is, the higher the level, the greater the authority (Hall, 1982:81). Of this follows that the manager has more authority than middle managers, who again has more authority than foremen do. What is reasonable to expect with regard to managers external role in organizations with varying degree of vertical differentiation? It is reasonable to predict that managers in highly differentiated organizations who have delegated authority to the long line of submanagers under them, have more time for performing the external part of their leadership role. In other words a high degree of vertical differentiation may be more conducive for performing a broader scanning of the environment for information, and therefore a broader network range. We also believe that a higher vertical differentiation requires a more active networking from the managers, as a long line of authority is normally coupled with specialised tasks and duties that need coordination towards changes in the external environment. The hypothesis is therefore:

H3: Managers in organizations with a high degree of vertical differentiation will tend to have a larger network range than managers in organizations with low degree of vertical differentiation.

3.4 Horizontal differentiation

Horizontal differentiation refers to the subdivision of the tasks performed by the organization among its members (Hall, 1982:78). Horizontal differentiation is clearly reflecting an organization's degree of complexity. The more tasks that need to be divided into groups, the more complex the organization becomes. Horizontal differentiation is often referred to as the number of departments, divisions, or subunits in an organization (Pfeffer, 1982). Whereas some researchers focuses on specialization in terms of professionals as an indicator of horizontal differentiation, we follow writers like Blau & Schoenherr (1971) and Hall, Haas & Johnson, (1967) who defines horizontal differentiation in terms of the number of subunits in an organization.

We expect that increased horizontal differentiation affect managers network range positively. The rationale is that a high degree of horizontal differentiation implies that the organization is in charge of more diverse products or services, and therefore needs more diverse information from the environment. The top manager is likely to have an active external leadership role which implies attention to diverse sectors of the organization's environment. The hypothesis is:

H4: Managers in organizations with a high degree of horizontal differentiation will tend to have a larger network range than managers in organizations with low degree of horizontal differentiation.

4. METHODS

4.1 Design and setting

Our research problem invites to the establishment of causal relations between organizational characteristics and network range, through the testing of several hypotheses. Due to differences in structural characteristics of different industries, we have chosen to study only one industry. This will reduce variation in our dependent variable. The Norwegian fishing industry consists of both small and large companies, as is also reflected in our sample. This variation in size, and in organizational forms, is instrumental in the sense that to explain variation in our dependent variable, we need variation in our independent variables. In size, the range of the norwegian fish-processing industry is from one-man-companies to companies with 300 employees. The size distribution of the population is shown along with the size distribution of our sample in figure 3 on page 6.

This industry is particularly suited for for studying network characteristics of four reasons. Firstly, both the purchase of fish and the sales of processed products are to a large degree based on personal relations. In some parts of the industry, like in the trade of stockfish, relations in many cases go back several generations.

Secondly, for studying the external network of managers, we find it important to identify an industry for which changes in the external environment has an immediate influence on the company's strategic options. The Norwegian fishing industry is relying on the access to a natural resource, fish. With the catch being decided by politicians with many interests to balance, based on advice from scientists working with less then perfect methods for estimation, it means that the catch of the different species of fish may vary quite a lot from year to year. As an example, the catch of Norwegian-arctic cod during the last ten years have ranged from 200.000 tonnes in 1990, to 890.000 tonnes in 1997. Flexibility has shown to be the most important characteristic of successful firms in the fishing industry (Dreyer, 1998), and the ability to flexibly

alter your organization, both regarding size and form of production, requires information about input and output markets, as well as other barriers to change.

Thirdly, varying landings of fish leads to fluctuating input prices, which leads to fluctuating prices in the output markets. This means that the monitoring of both input and output markets is very important. In a market characterized by fluctuating prices, long term contracts are difficult to obtain, which leads the actors to short-term trading. Many customers will place orders every week, constantly seeking for the lowest price. This makes frequent contact with customers a common characteristic of this industry.

Finally, the fishing industry meets regulations on every corner. The exploitation of a common resource needs regulation, and the exporting of food, that in many markets compete with heavily subsidized agricultural products means that market regulations is a constant preoccupation. And as most of the fishing industry is located in remote areas there are certain possibilities of public support. On all these areas gathering and understanding information is vital. This means that an orientation towards government and trade organisations is important both for monitoring and influencing the external conditions of ones business.

4.2 The survey

The empirical basis for this paper is a survey of the Norwegian fishing industry. This industry consists of more than 600 processors of fish. The population includes processors of codfish, herring and mackerel, shrimps and salmon. Further it includes producers of canned products. It does only include fish farming companies and exporters of fish to the extent that processing is a considerable part of their activities.

The survey was carried out with the help of the Norwegian fisheries directorate. We contacted the region directors, who in their turn motivated their local representatives. From these we had assistance both in identifying companies and performing the survey. All companies were contacted by employees in the fisheries extension service, and some forms were filled out in the form of an interview. A few interviews were performed by ourselves, which has given us an invaluable understanding of how these questions are interpreted by the respondents. Knowledge of how our respondents have interpreted our questions, is in our opinion vital for the ability to interpret our data.

The survey was directed at the managers of the companies, and was performed in the latter half of 1998. It was sent to a stratified sample of 293, as we wanted representativity both regarding size, geography and form of production. We had 145 answers, representing a response rate of 49,5%. This was obtained after the initial contact from the

extension service, a mail reminder and in some cases, a phone call.

4.3 The sample

Our sample consists of 145 cases. These companies have an average of 36 employees, which is a bit larger than the Norwegian fishing industry as a whole (22 employees). The size distribution of the population and our sample is shown below.

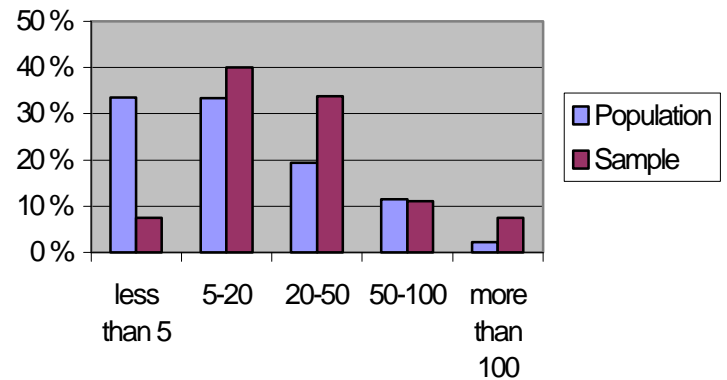


Figure 3 Size distribution in the population and our sample.

This overrepresentation of larger companies is partly intended, which means that the survey was initially distributed to a representative part of the population, while we in our follow-up decided to focus on larger companies. As large parts of the survey are on subjects more relevant to larger companies, we wanted a sample that contained a critical mass of large companies. One third of the population has less than 5 employees, these companies could for many purposes be left out of the analyses. In this paper, however, we found that the network range of managers in small companies is of equal importance to that of managers in large companies. Our analysis is therefore based on the entire sample. Our sample is otherwise representative of the population both regarding geography and distribution with regard to the kind of fish being produced.

4.4 Measures

4.4.1 Dependent variable.

The dependent variable in this study is the range of the network of managers. Good measures of network range is hard to find in existing literature. Studies have been performed on sociological structures, but is hard to find on industrial networks. In this paper, we have operationalized range as the number of groups of actors that a manager has

contact with yearly or more often². The grouping of actors was pretested on some firms in the fish processing industry. We ended up with the following categories: competitors and non-competing firms, labour organizations, employers associations, the service sector, customers, suppliers (domestic and foreign), R&D-institutions and politicians.

4.4.2 Independent variables.

The independent variables in our study are: 1) The size of the company, 2) administrative capacity, 3) horizontal differentiation and 4) vertical differentiation.

Size. We have chosen number of employees as an indicator for size. We considered two other options, turnover and purchase of fish. However, we found that both these would be too dependent on which part of the industry the company belongs to. An example would clarify this point: a producer of 5000 tonnes of fish would be a large producer if he produced fillet of cod, but a small producer if he were producing round-frozen mackerel.

Administrative capacity. The number of employees in administrative positions is seen in relation to the total number of employees.

Horizontal differentiation. Horizontal differentiation is measured as the number of departments in the company.

Vertical differentiation. Vertical differentiation is measured as the number of hierarchal levels.

5. RESULTS

5.1 Descriptive Results

The descriptive statistics and the correlations of the independent variables are presented in Table 1.

Table 1 Means, Standard deviations and Correlations (N=145).

	Mean	St.dev	Min	Max	1	2	3	4
1. Size	36	46	1	300				
2. Administrative capacity	,13	,098	,03	,882	-,22*			
3. Horizontal differentiation	2,31	1,17	1	5	,51*	-,12		
4. Vertical differentiation	2,17	,8	1	4	,43*	,16	,34*	

² The respondents were for each group of external actors asked to mark how often they were in touch with actors from the different groups, on a scale from daily, through weekly, monthly, quarterly and to twice and once a year.

tiation

* - correlation is significant at the 0.01 level (2-tailed).

We see that administrative capacity is negatively correlated with size. This means that as companies have grown their staff of administrative personnel has not grown as much as has their staff altogether.

5.2 Multivariate Results

Table 2 shows the results of testing H1-H4. The overall results indicate that the model has some explanatory power. The percentage of variance explained is 23 %. The percentage of variance explained, adjusted for the number of variables in the model, is 21 %.

Table 2 OLS estimates of Organizational size, Administrative capacity, Horizontal and Vertical differentiation on Managers' network range (N=145).

Independent variables	Standardized coefficients	Unstandardized coefficients	S.E.
Size	,227**	7,054	,004
Administrative capacity	-,024	-,453	1,562
Horizontal differentiation	,168*	,268	,157
Vertical differentiation	,207**	,497	,222

F = 8,662

R² = ,232

Adj. R² = ,205

* p ,05 ** p ,02

H1 predicted a positive relationship between size and network range. Our data shows that size has a significant impact on network range. A one standard deviation (s.d.) increase in the organizational size implies a .23 increase in network range, net of the other variables.

H2 predicted a positive relationship between the administrative capacity in the organization and managers network range. Here, our analysis does not yield any significant results, and the size of the coefficient is in the opposite direction of the predicted.

H3 predicted a positive relationship between vertical differentiation and network range. The hypothesis is supported, with a significant result. A one s.d. change in vertical differentiation increases the network range with .27.

H4 predicted a positive relationship between horizontal differentiation and network range. Here too the results are significant. The impact is somewhat weaker than for the other variables. A one s.d. increase in horizontal differentiation increases the network range with .17.

6. DISCUSSION

The results of testing the hypotheses can be concluded as follows: Given our relatively limited conceptual model, that only tests one aspect that might influence managers network range, we consider an explained variance of 23% a decent result. Organizational characteristics do seem to matter for managers external role. Regarding each of the explanatory variables, it is interesting to note that organizational size and vertical differentiation seem to be the best predictors of network range, with horizontal differentiation also contributing positively. The contribution to network range from administrative and leadership capacity is not significant. We are not quite sure whether or not H2 should be rejected on the basis of this result, given that we believe that our measure is not a very good one. This will be discussed below.

A common characteristic of our three independent variables is that they in some way measure the degree to which the manager is relieved of work and responsibility, and thus enabling him to perform the external part of his leadership role. When differentiation have more significance than administrative capacity, it makes good sense in the way that differentiation leads to more de facto delegation of authority and responsibility, thus relieving the manager in a more effective way.

That managers in larger organization have wider networks, may have several explanations. One plausible explanation is that a larger size makes the organization more interesting for both other companies, politicians, researchers, journalists and different organizations. This means that the direction of external contact should be of interest for future research.

6.1 Limitations of the study

Our dependent variable, network range, could be operationalized in other ways. It is always difficult to group actors in ways that is consistent with the respondents perception of their external environment, and that at the same time is comprehensive and contains the most relevant actors in firms environment.

Administrative capacity is not necessarily adequately measured as the share of administrative personnel in the organization. Some kinds of production may require more administration than others, and, more importantly, personal characteristics of the administrative personnel may be of higher importance than their number.

The concept of organizational size could of course be operationalized in several other ways. We have argued that turnover and processing (in tonnes of fish) could have been used, but that large differences between sectors made that less meaningful. An obvious response to this objection would be to perform this kind of analysis for each of the

five sectors in this material, or to constrict an index for size, based on both employees, the quantity processed and turnover as indicators for size.

7. CONCLUSION

Our results indicate that to view organizational characteristics as conducive to managers network range is a fruitful approach. However, the conceptual model and the empirical indicators may gain from some refinement.

7.1 Implications

Having explained 23% of the variance, we still leave much of the variance to be explained. It is likely to assume that personal characteristics, as the most important among many other factors, may explain much of the remaining variance. This result calls for future efforts to construct conceptual models explaining network range both in terms of personal characteristics of the manager and organizational characteristics. As personal relations might be more important in some industries than in others, similar tests on other industries than the fish-processing industry is called for.

To sum up: In this paper we have discussed what determines the range of network of managers. We have tested the influence of four organizational characteristics on network range, that is organizational size, administrative capacity, vertical differentiation and horizontal differentiation. We found that size and vertical differentiation were the most important of these, while horizontal differentiation had somewhat less influence. We did not find support for the hypothesis that administrative capacity contributes positively to the range of manager networks.

8. REFERENCES

- Blau, P. (1972) Interdependence and hierarchy in organizations. *Social Science Research*:1: 1-24.
- Blau, P.M. & Schoenherr, R. (1971) The Structure of organizations. New York: Basic Books.
- Burt, R.S.(1982) Toward a Structural Theory of Action. *AcademicPress*.
- Burt, R.S. (1992) Structural Holes. The Social Structure of Competition. *Harvard University Press*, MA:Cambridge.
- Bø, I. (1993) Folks sosiale landskaper. En innføring i sosiale nettverk. TANO
- Campbell, K. (1988): Gender Differences in Job-Related Networks. *Work and Occupations*, Vol.15 No.2, May 1988, 179-200.
- Child, J. (1973) Predicting and Understanding Organization Structure. *Administrative Science Quarterly*, 18:168-185.
- Dreyer, B. (1998) Kampen for tilværelsen et studium av overlevelsstrategier i fiskeindustrien. Avhandling for Dr. Scient-graden, *Norges fiskerihøgskole, Universitetet i Tromsø*, september, 1998.
- Fahey, L. W.R. King and V.K. Narayanan (1981), "Environmental Scanning and Forecasting in Strategic Planning - The State of the art", *Long Range Planning*, 14, 32-39.
- Fiedler, F.E. (1996) Research on Leadership Selection and Training: One view of the Future. *Administrative Science Quarterly*.41:241 -250.
- Fisher, C. (1982): *To dwell among friends: Personal networks in town and city*. Chicago, University of Chicago Press.
- Foss, L. (1994): Entrepreneurship: The impact of Human Capital, a Social Network and Business Resources on Start-up. Thesis submitted for the Degree of Dr.oecon at Norwegian School of Economics and Business Administration, Bergen.
- Granovetter, M. (1973) The Strength of Weak Ties. *American Journal of Sociology*, 78:1360-1380.
- Hall, R. H. (1982) Organizations: Structure and Process, *Prentice-Hall, Inc. Englewood Cliffs, NJ*.
- Hall, R. H., Haas, E. & Johnson, N.J. (1967) Organizational Size, Complexity and Formalization. *American Sociological Review*, 32:903-912.
- Henderson, A.D. (1999) Firm Strategy and Age Dependence: A contingent view of the Liabilities of Newness, Adolescence and Obsolescence. *Administrative Science Quarterly*, 44:281-314.
- Håkansson, H. & Johanson, J. (1993) The network as a governance structure. Interfirm cooperation beyond markets and hierarchies. In G.Grabher (ed.) *The Embedded Firm. On the socioeconomics of industrial networks*. Routledge. London and New York.
- Kimberly, J.R. (1976) Organizational Size and the Structuralist Perspective: A Review, Critique, and Proposal, *Administrative Science Quarterly*,21: 571- 597.
- Lord, R.G. & Maher (1991) "Cognitive theory in industrial and organizational psychology, in Dunette, M.D. & L.M. Hough, (eds.) *Handbook of Industrial and organizational Psychology*, Vol.2, 1-62. Palo. Alto, CA:Consulting Psychologist Press.
- Marsden, P.(1987): Core discussion networks of Americans. *American Sociological Review*,_vol. 52, February, s 122-131.
- Meyer, M.W. (1972) Bureaucratic Structure and Authority. New York: Harper and Row.
- Mintzberg, H. (1973) The Nature of Managerial Work. HarperCollins Publishers.
- Mintzberg, H. (1979) The Structuring of Organizations. A Synthesis of the Research. Prentice-Hall, Inc. Englewood Cliffs, N.J.
- Pfeffer, J. (1982) Organizations and organization theory. Pitman Publishing Inc. MA.
- Poel, M.van der (1993): *Personal networks. A rational-choise explanation of their size and composition*. Lisse: Swets & Zeitlinger.
- Pugh, D., Hickson, D., Hinings, R. (1969) "The Context of Organizational Structures." *Administrative Science Quarterly*, 14:91-114.
- Reese, P.R. (1992): Entrepreneurial Networks and Resource Acquisition: Does Gender make a difference? Ph.D. thesis. Department of Sociology, University of North Carolina at Chapel Hill.
- Stuart, T.E., Hoang, H., Hybels, R.C. (1999) Interorganizational Endorsements and the Performance of Entrepreneurial Ventures, *Administrative Science Quarterly*, 44:315-349.
- Uzzi, B. (1996) . The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect. *American Sociological Review* 61:674-698.
- Uzzi, B. (1997). Social Structure and Competition in Interfirm Networks: The Paradox of Embeddedness. *Administrative Science Quarterly* 42:35-67.
- Weber, M. (1947) The Theory of Social and Economic Organization. New York: Free Press.