Exploring Mediators: The Effects of the Composition of Organizational Affiliation on Organization Survival and Mediator Performance

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Abstract
Market mediation literature has been taking primarily a triadic view in studying the role and impact of mediators, actors that occupy a middle position, on supply and demand conditions in markets. Mediating organizations *facilitate* exchange relationship on continuous basis between multiple networks of interdependent affiliated actors. An affiliation structure gives rise to the property of duality whereby the behavior and performance of the affiliates affect the behavior and performance of mediators and vice versa. In the context of the banking industry, this study examines how the structural properties of the underlying network of affiliated organizations affect the survival of affiliated organizations and the performance of mediating organizations. The results show that firms that are affiliated with mediating organizations having high customer-set connectedness or with those that are industry specialists increase their chances of survival. Furthermore, mediating organizations having high customer-set connectedness experience lower loan loss than peripheral ones. The study contributes to organizational studies by incorporating a network view to the predominately triadic market mediation literature, explicating the determinants of the effectiveness by which mediating services are rendered, and suggesting new sources of competitive advantage that advance as well as complement established explanations. Implications for the network perspective, organizational technology and the economic theory of the banking firm, as well as firm and mediator management are considered.
Key words: bankruptcy, composition, banking, affiliation, market mediation, structural embeddedness.
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Market mediation literature is concerned with the role and impact of mediators, actors that occupy a middle position, on supply and demand conditions in markets. The role of mediators in markets has been explained in terms of efficiency enhancing, resulting from superior search processes, legitimacy enhancing in the presence of uncertainty and innovation enhancing (e.g. Hirsch 1972, Khurana 2002, Obstfeld 2005, Zuckerman 2000, Zuckerman and Kim 2003). Taking primarily a triadic approach, mediators were conceptualized as actors that amend (e.g. adjudication), substitute (e.g. Hirsch 1972) or establish (e.g. Obstfeld 2005) ties. The most extensive stream of literature on mediators is based on strategies for amending already existing but failing ties. Such is the work of marriage consultants or the legal adjudication system. A second stream of literature examines mediators that occupy the role of "surrogate consumers" that influence consumption through public recommendations and endorsements (Hirsch 1972, Zuckerman 2000, Zuckerman and Kim 2003). The third stream examines individual actors that establish relationships on ad hoc basis (Baker and Obstfeld 1999, Khurana 2002, Obstfeld 2005).

This research extends the triadic market mediation literature by taking a network approach to mediation in studying mediating organizations. Mediating organizations make possible the physical, verbal, informational or financial interaction between actors. They occupy a middle position by virtue of their institutional role namely the *facilitation* of multiple exchange relations between actors. They primarily enable rather than conduct or initiate trade and exchange relations (e.g. North 1991). Their transactional, funding and risk services facilitate exchange ties on continuous as opposes to ad hoc basis between multiple actors. The paper advances our understanding of mediators by arguing that under conditions of uncertainty the structure of the network of affiliated actors, affiliated with a mediating

organization, impacts the return to the affiliated actors as well as the mediator by directly influencing the effectiveness of the mediating service. Mediating organizations influence members' success and are simultaneously affected by their members.

In the study of organizational failure, I develop and test a theory, which explicates the impact of the properties of the network of organizations affiliated with mediators on affiliated organizations survival and mediator performance. Organizational failure has been attracting academic attention for a considerably long period of time (e.g. Altman 1967, Baum and Mezias 1992, Stinchcombe 1965). Organizational failure provides an opportunity to learn and develop our analytical models of entrepreneurial value creation (McGrath 1999, Sitkin 1992). It is an ex-post measure, which constitutes the ultimate measure of performance. Its unique properties have given rise to various theoretical perspectives that attempt to explain organizational failure. The age dependence research in organization ecology examines the relationship between firm age, carrying capacity and failure rates (e.g. Brüdel and Schüssler 1990, Stinchcombe 1965). The resource-based view contends that failure of young firms is caused due to the lack of management competence and of older firms due to the lack of adjustments to changes in the competitive environment (Thornhill and Amit 2003). Economists have been focusing on failure predictions based upon financial ratios (Altman 1967) and sociological accounts break grounds with the focus on intra-firm explanations and investigate how the properties of supplier-customer networks impact firm failure (Uzzi 1996).

Although organizational failure is commonly defined by the lack of capital to cover organizational financial obligations (Boardman et al. 1981) the role of financial intermediaries in affecting organizational failure is not clearly articulated. Financial

intermediaries are the largest external capital providers to small and medium size firms (Petersen and Rajan 1994). As the largest external capital providers they play a central role in influencing organization ability to meet financial obligations and hence also organizational survival (Bulow and Shoven 1978).

Financial intermediaries are conceptualized as organizations that mediate merely between providers of capital and borrowers (e.g. Diamond, 1984). Accordingly, financial intermediaries provide services to an atomistic set of customers that are merely pool interdependent on one another. The atomistic conceptualization ignores the role that banks play in enabling trade (North, 1991). I relinquish the assumption of atomistic customers and examine the implications of borrowers' interdependence on survival and performance.

In particular I examine the relationship between the properties of organizational affiliation and organizational survival and financial intermediaries' performance in the context of the Norwegian banking industry. I test hypotheses linking properties of the network of affiliated organizations with organizational survival probability and mediator performance by utilizing 462 randomly sampled firms drawn from a unique data set that contains the vast majority of firm-bank relationships in the Norwegian economy in the years 1999 to 2002. The uniquely rich data allow for the first time the testing of hypotheses linking the properties of the network of organizational affiliation and performance. I provide support for the important role of the network of organizational affiliation in influencing firm survival as well as mediating organization performance.

The current research contributes not only to the market mediation literature but also to the fundamental search for the antecedents of competitive advantage. I argue that the underlying properties of mediator networks impact the performance of

both affiliated organizations and mediators. I provide support for the argument that the sources of competitive advantage or disadvantage do not necessarily reside in an attractive industry, (Porter 1980), intra-firm resources or capabilities (Amit and Schoemaker 1993, Barney 1991) or inter-firm relationships (Dyer and Singh 1998) but in the composition of customer affiliation networks.

Burt (2000: 411) argues that a task of future research is to separate performance effects of an individual's first order network location from the second order network location of the organization to which he or she is affiliated. We have developed an impressive body of knowledge of how individual actor performance is influenced by an actor's first order network, the network of the actor's direct contracts (e.g. Burt 1992, Mizruchi and Stearns 2001). Much less is known on the impact of second order networks, the network that your direct contracts maintain with others, on actor as well as organization performance (Burt 2000). This article directly addresses Burt's call by first specifying and analyzing multiple first order networks effects and then explicating and empirically examining how second order network effects, the effects originating from the properties of the organization with which firms are affiliated, impact performance.

Theory and Hypotheses

Mediators affect supply and demand conditions in markets through their occupation of a middle position. Mediators are conceptualized as actors that amend (e.g. adjudication), substitute (e.g. Hirsch 1972) or establish (e.g. Obstfeld 2005) ties. Matchmakers, professional executive search firms, or security analysts create value by indirectly solving problems characterized by uncertainty to actors lacking relevant knowledge, competences or the legitimacy to take action. The mediating category of the triadic exchange typology (Simmel, 1950) has received minor academic attention,

(For exceptions see: Baker and Obstfeld 1999, Obstfeld 2005, Zuckerman 2000) rendering the mediator concept theoretically underdeveloped (Krackhardt 1999).

Mediating organizations *facilitate* exchange relationships on continuous basis between numerous actors. They have as a primary function, the linking of clients or customers who are or wish to be interdependent (Thompson 1967). They have been found to occupy an important role in the economy as well as in social life (Davis and Mizruchi 1999, North 1991). Although practically all organizations are affiliated with mediating organizations, mediating organizations on their own rights are largely neglected objects of organizational theoretical and empirical inquiries (For exceptions see: Barnett and Carroll, 1987 and Stabell & Fjeldstad, 1998).

Mediating organizations such as telecommunication firms, airliners and financial intermediaries, are third party firms that create value by providing an amalgam of networking services to their respective customer sets. Value is a function of network size and composition (Katz and Shapiro 1985, Stabell and Fjeldstad 1998). Mediator network is defined as all organizations, which are affiliated with a specific mediator at a specific point of time. Actor affiliation with mediators determines both network size and the network underlying properties.

Affiliation network studies take as their starting point the central idea of foci (Feld 1981), a focus around which joint activities are organized (e.g., work places, families, etc.). Studies of affiliation networks, like interlocking directorship (Mintz and Schwartz 1981), and voluntary organizations (McPherson, and Smith-Lovin, 1987), all conceptualize an affiliation network in terms of a set of actors and a set of social occasions or events (Wasserman and Faust 1994). Events or focuses are largely viewed as a method of classification and categorization rather than as actors which can be specifically analyzed and whose actions affect the value of affiliation.

Mediating organizations are conceptualized as the focuses or clubs, which provide networking services to facilitate exchange relations. Value created by mediating organizations is dependent not only on affiliation size but also on the properties of the affiliates and their interactions. The structural embeddedness of mediating organizations, i.e. the local structure of relations around them (Granovetter 1985), impacts the value to affiliates as well as to mediators.

The nested structure of affiliation gives rise to the network property of duality (Breiger 1974). Performance duality implies that the behavior and performance of affiliated organizations affect the behavior and performance of mediators and vice versa. Hence, misplacement of funds and wrongful project selection may have dramatic consequences for firm performance and ultimately for firm survival of both affiliated organizations and financial intermediaries. Financial intermediaries are particularly vulnerable to bankruptcies. Customer bankruptcy rates threaten not only a financial intermediary short-term performance but also its viability and solvency. Financial intermediaries financing decisions in turn directly impact entrepreneurs' activities and organizational success and failure.

The institutional role of banks is to enable trade (North 1991). They enable inter-customer interaction on continuous basis by the provision of credit for investment, the funding of actual trade flows, the provision of payment service and the management of risk. From an institutional perspective, banks ameliorate information asymmetries. They operate in the presence of information asymmetry, which makes the provisioning of financial services to informationally opaque firms difficult (Berger et al. 2001). Uncertainty about the value of projects and the creditworthiness of borrowers can cause erroneous selections of new projects causing either the misplacement of funds or the failure to successfully select viable projects.

The Board of Governors of the Federal Reserve System (2002) states that "[t]he heterogeneity of small firms has impeded the development of general standards for assessing applications for small business loans and has made evaluating such loans less straightforward and relatively expensive…Lender can use information gathered over time through long-term *relationship* with business owners and *other members* of the local community to monitor the health of the business and to build appropriate incentives into loan agreements" (Italic added). The above statement highlights both the relational and structural mechanisms that underlie bank funding of businesses.

The relational mechanism stresses the role of direct cohesive ties as a mechanism for gaining fine-grained information (Uzzi, 1997). Recent contributions in organization theory and strategy show how the nature of the dyadic ties between banks and firms affect search costs and negotiations, alleviate risks of opportunism and enhance learning (Uzzi 1999, Uzzi and Lancaster 2003). Following this line of reasoning the nature of the dyadic relations between a firm and its banks affect the amount and quality of information that a bank is exposed to and hence the financial performance of firms.

The structural mechanism stresses the role of indirect channels of information, reputation and referral (Baum et al. 2003). The GrameenBank, whose founder was recently awarded the Nobel Peace Price, taps into the knowledge of its customers who are friends and relatives of borrowers and rely on them for monitoring and sanctioning. By relating to the network of customers rather than to the atomistic individual customer (Boot 2000, Diamond 1984), the GrameenBank was able to overcome information hazards that impede the provision of credit and establish monitoring and sanctioning mechanisms on behalf of the collective (Stiglitz 1990).

In an economy that increasingly relies on knowledge workers and intangible resources (Castells 1996), firms face similar challenges to the GrammenBank customers in transmitting their creditworthiness and the feasibility of their projects to banks. Hence, firms may share a property with the people at the bottom of the pyramid (London and Hart 2004) in the sense that they may have to rely on their bank being structurally embedded in the large network in which they themselves are embedded in order for the bank to obtain the information necessary to evaluate their projects. In this paper the sphere from which such information is gathered and learning occurs, is conceptualized in terms of a bank own network of business customers and the structure of the relationship between them.

Figure 1a depicts the atomistic conceptualization (e.g. Diamond 1984) and Figure 1b depicts a simplified version of the connected, structurally embedded, conceptualization. In Figure 1a, banks mediate between providers of capital and borrowers. Banks provide services to an atomistic set of customers that are merely pool interdependent on one another (Thompson 1967). Resources are pooled and banks merely provide the delegated function of monitoring investments (Diamond 1984). Bank learning is through dyadic exchange of information, which is subject to agency hazards. By assuming that customers are not structurally embedded, the atomistic conceptualization ignores the role that banks play in enabling trade (North, 1991).

Insert Figure 1 here

In Figure 1b, the connected conceptualization, customers are embedded in inter-customer relations, which are represented by thick lines, in addition to customer-bank relations. Customers are both pooled and directly interdependent on one another. Banks perform the joint roles of facilitating and enabling inter-customer exchange

(North 1991, Stiglitz 1990) and delegated monitoring on behalf of the collective. Bank learning and information availability is a function of a bank's own network of business customers as well as the structure of the relationship between them. The paper relinquishes the assumption of the atomistic conceptualization and examines the implications of structural embeddedness on survival.

Customer-set connectedness.[1] Banks operate in the presence of inherent information asymmetry in their relationship to customers and must seek broadly on behalf of the collective of customers to overcome informational hazards that hinder exchange in the individual relationship. Banks process information pertinent to success or failure of customers embedded in a system of fragmented distributed knowledge (von Hayek 1945). Banks approach problematic loans by liquidating assets either pre-bankruptcy, severing customer relationships or re-negotiating loan contracts (Sinkey 1989). The ability of the bank to offer any of the above solutions is dependent on the early identification of problematic loans. The amount of information available to banks in relation to borrower's business and industry in respect to finance, production, technology, marketing accounting, strategic and business planning, and competition (Sinkey, 1989) determines the timing of the identification of problematic loans.

Bonacich (1987: 1171) argues that "the amount of information available to a unit in the network is positively related to the amount of information available to those with which it has contact". Accordingly, mediator informational position is a function of the connectedness of its affiliated actors. Affiliated actors who are highly connected are sought after for their product and service qualities. They occupy a central position in the business network, which increases information availability

[1] I employ the term customer-set connectedness to facilitate the understanding of the theory in the context of mediators. From both technical and social network theoretical perspectives, the appropriate concept is mediator centrality.

(Ingram et al. 2005, Powell et al. 1996). Ingram, Robinson and Busch, (2005) show that actor connectedness positively impacts the magnitude of trade flows due to the increase information availability. Information availability negatively affects uncertainty that surrounds exchange relationships by increasing opportunity recognition, facilitating quality evaluation, and reducing search costs.

The aggregate degree of connectedness of individual affiliates determines customer set connectedness. A bank's customer-set connectedness affects the timely access to, the quality and the breadth of information gained by indirect channels, referral, and reputation. The customer-set connectedness impacts the bank's ability to evaluate bankruptcy risk by providing two substantive benefits: accurate assessment of risky loans and successful project selection before project initiation. Those activities are at the core of bank services and bank performance is highly dependent on the successful execution of those activities. Hence, a bank's customer-set connectedness, conceptualized in terms of the attractiveness of affiliated organizations rather than of bank size, confers information benefits resulting in early identification of problematic investments or selection benefits of projects before initiation. All else equal, organizations affiliated with a bank that provide services to highly connected customer-set are expected to fail at lower rates than organizations that are affiliated with a bank that provide services to a sparsely connected customer-set.

Hypothesis 1a. The greater the connectedness of a bank's customer-set, the lower the likelihood of any particular customer bankruptcy.

The moderating effect of age. While a bank's customer-set connectedness may confer benefits to firms by improving information instrumental to project selection and the

termination or support decisions of existing projects, these benefits may not be equally distributed among firms. Young organizations are prone to higher failure rates due to the liability of newness (Stinchcombe 1965:148-9). They are particularly vulnerable due to their lack of experience and knowledge of the roles of the game (Baum 1996) or general industry knowledge of behavior and opportunities. Their lack of a formidable stock of experiences to draw upon is limiting. Competences and capabilities have not had the sufficient time to develop in order to provide competitive advantage. These include the lack of management competences (Thornhill and Amit 2003). Young organizations are constrained due to their inability to influence the external environment and their lack of legitimacy. Firm resources may be stretched to the limit and credit rationing (Stiglitz and Weiss 1981) may hinder operations. Finally, young firms will not enjoy the stability of long-term customer-supplier relationships and will be exposed to frequent opportunistic behavior. Older organizations in contrast have had the opportunity to establish their reputation, credibility, reliability and accountability, but structural inertia may create an unreachable gap between the organization and its competitive environment leading to failure (Hannan and Freeman 1989, Thornhill and Amit 2003).

The high risk associated with young firms increases the importance of a bank's customer-set connectedness in the evaluation of firm bankruptcy probability. Under conditions of lack of relevant knowledge implied from firm age, connected mediators will be able to add more value to young firms than sparsely connected mediators because the informational advantages impacts the former mediator's ability to select and evaluate projects as well apply the relevant management competences. This is similar to the advantages conferred to new firms from being affiliated with venture capitalists which provide management competences, industry specific

knowledge and information essential for the success of newly established firms. Older firms face lower levels of risks, have developed management competences and are knowledgeable of industry conditions. The impact of customer-set connectedness on the likelihood of survival diminishes as firms mature.

> *Hypothesis 1b. The connectedness of a bank's customers is more is more positively related to the likelihood of survival when the customer is young than when the customer is old.*

Mediator specialization. "There are many products for which the utility that a user derives from consumption of the good increases with the number of other agents consuming the good" (Katz and Shapiro 1985:424). Network economists argue that the value of participation for each actor in a network increases with network size (Economides 1996, Katz and Shapiro 1985). Such network externalities have been shown to affect technology adoption, pricing and network firm strategy (e.g. Katz and Shapiro 1985, Stabell and Fjeldstad 1998). If global network effects, or demand size economies of scale positively impact actor value from being affiliated with a specific mediator, one may expect that firms that are affiliated with larger mediators will be less likely to fail. While it is clear why the size of the network of users adopting DVD or having a cellular phone increases the value to each actor in the network, the mechanism by which network size can impact value creation in the presence of information asymmetry is not so straightforward. Information which flows in networks becomes more diffuse and difficult to manage as network size increases. Organizations learn in terms of encoding inferences from history into routines that guide behavior (Levitt and March 1988). For the understanding of learning and

routines attention should be given to the experience of individual organizations as well as to organizational networks (Håkansson 1987, Levitt and March 1988). I argue that mediators are presented with the opportunity to learn not only from specific firms but also from subgroups that are affiliated with them.

Focusing on telecommunication services, Rholfs (1974) identifies identity-based externalities whereby network externalities are generated by the identity of the other users connected. Rohlfs (1974) points out that network size may be conceptualized at a customer's ego network level. The argument for identity-based externalities is that individuals tend to call their friends, families and colleagues, resulting in actors setting high value for identity-based ego network properties rather than for global ones.

I advanced a different local mechanism namely information externalities. I argue that information externalities affect decision-making when the network of affiliated organizations provides access to relevant information about projects. The local network is conceptualized in accordance with the possession of pertinent information. Hence, it is the potential for reducing information asymmetry that defines sub-grouping and not necessarily the identity of the other members of the local network.

One manner by which information externalities may come into play is in situations of mediator specialization. Mediator investment-based specialization is defined as the size of bank investments in each industry. Mediator specialization occurs due to mediators' selection of specific firms, due to identity-network externalities whereby firms change affiliation when other organizations in their business network are already affiliated with a specific mediator or due to mediators creating reputation that specialized knowledge has been accumulated which attracts

previously non-affiliated firms. I argue that mediators that finance industry specific projects which amount to a large portion of their invested portfolio are motivated to learn from intra industry knowledge spillovers. Such knowledge including the demand for industry products or services, supply conditions, intra-industry rivalry, technological change and challenges facing the industry impacts mediators ability to evaluate specific firm's bankruptcy risk. Such an exposure also motivates banks to pay attention to such industries and particular attention to specific industry actors that may be gravely affected by changing industry conditions. Hence, dependency enhances attention, which translates into learning. To the contrary, the servicing of a large number of actors from the specific industry without committing a large portion of resources to that industry diminishes the motivation to learn and explore intra-industry knowledge.

> *Hypothesis 2. The greater the bank's specialization in a customer's industry, the lower the likelihood of that customer's bankruptcy.*

A relational mechanism, the investment by financial intermediaries in long-term credit relationships with their affiliated customers can mitigate problems of asymmetric information by producing information about firms and using it in their credit decisions (Boot 2000, Jensen and Meckling 1976) and increase customer power (Baker 1990, Uzzi 1999). The identification of possible bankruptcy requires a bank to have access to multiple reliable sources of information. Multiple banking relationships decrease bank power position and hence prices in markets (Uzzi, 1999), but power has less bearing in bankruptcy evaluation. Similarly, while exclusive relationships establish a channel for the transfer of fine-grained information, for

bankruptcy evaluation the value of this channel is inherently questionable (e.g. Jensen and Meckling 1976). To merely ensure that the findings are not spurious due to the effects of the relational mechanism, namely the configuration of the firm-bank relationships, I directly control for this alternative explanation.

Bank loss. What determines the performance of mediators? Previous research borrows the assumption from economics that if customer benefits are identified, mediators must have gained more benefits and shared them with their customers, (Petersen and Rajan 1994, 1995, Uzzi 1999). To the extent that banks process information pertinent to the success or failure of customers embedded in a system of fragmented distributed knowledge, (von Hayek 1945) and in which information about vertically related activities is a source of uncertainty reduction, (Arrow 1975) customer-set connectedness is expected to impact the extent of bank loss. The performance duality (Breiger 1974) of affiliated organizations and mediators implies that properties of the affiliated network should impact bank performance as well as affiliated organization performance.

It was argued that customer-set connectedness confers benefits in terms of early identification of questionable financial engagements. Accordingly, such engagements may be prematurely terminated and hence induce bankruptcy of projects with extremely low survival chances. The informed bank is presented with an opportunity to liquidate customer assets or withdraw its investments at an earlier stage than the non-informed bank resulting in lower loss per failed customer. Informed banks are also in a position to decrease the size of the investment loss. Whether by applying management competences suitable for firms experiencing financial crises or by superior knowledge regarding the opportunities to sell firm assets, the informed bank can reduce the total firm loss and hence bank loss. Hence when bankruptcy is

unavoidable the better-informed bank is in a position to a) withdraw financing early b) get a hold of assets before bankruptcy is declared c) refuse to grand more loans. Notwithstanding the specific bank choice, all three alternatives lead to a reduction in asset loss.

It was also argued that customer-set connectedness confers benefits in terms of project selection. The selection advantage implies that when customer-set connectedness increases, its increased information enables it to select better projects and hence decrease the likelihood that any affiliated actor will fail. Superior selection capabilities impact the proportion of customer failures within any specific bank's portfolio of customers. All else being equal, the proportion of customer failures within a bank's portfolio of customers as well as bank loan loss originating from customers that actually fail will be negatively associated with the connectedness of a bank's customer-set.

Hypothesis 3a: The greater the connectedness of a bank's customer-set, the lower the bank's loss per bankrupt customer.

Hypothesis 3b: The greater the connectedness of a bank's customer-set, the lower the proportion of customer failures within a bank's portfolio of customers.

Methods

Data Collection and measurement.

I utilized multiple archival sources to construct a unique data set of Norwegian limited liability firms operating between 1999 and 2002 and their respective banking relationships. The Norwegian authorities provided me with tailor made data set containing all banking relationships of the vast majority of firms operating in Norway

in the years 1999 to 2002. The data contains bank-firm relationship based information for 98% of the Norwegian firms measured in terms of total sales. The information received was crosschecked with accounting entries for relative agreement on the aggregate with for example financial expenditure and revenue.

Small and medium size firms (SME) with total sales between $1m to $50m per annum were chosen due to their heavy dependence on bank financing and the existence of meaningful information asymmetry between them and their mediators (Berger and Udell 1998). Large size firms have access to financial markets and personal sources may suffice micro size firms. From the SME population I selected firms, which had been providing reliable and continuous accounting and banking information for at least 4 consecutive years and the firms had reported bank loans in the last two years before bankruptcy. Hence, I excluded firms which failed to report to the Norwegian Company Register because such an omission is already a signal of low quality. Firms, which do not meet annual report submission deadlines lose their limited liability protection and are removed from the register of companies. The Norwegian Firm Register was utilized to construct the sample of the non-bankrupt firms and in order to gather accounting information for all sampled firms over a three-year period.

The Norwegian Firm Bankruptcy Register, updated weekly, contains detailed information including firm name, organization number, address, industry specialization and date of declared bankruptcy for all bankrupt firms. The information was crossed-referenced using the Norwegian Gazette, which publishes firm related registry changes in general, and bankruptcy announcements in particular. From the sampling frame of firms that comply with all the above restrictions I randomly selected two groups of 235 firms. The first group was randomly selected from the

target population of firms that did not go bankrupt. T-tests reveal no selection bias in terms of sales, assets, age and employees between the sample and the target population (p_{min} = 0.330). The second group was randomly chosen from the target population of bankrupt firms. T-tests reveal no selection bias in terms of sales, assets, age and employees between the sample and the target population (p_{min} = 0.256). Seven firms were excluded from the final analysis due to missing data.

I argued that the configuration of the network of affiliated firms provides early signals to banks, which assist them in avoiding investment pitfalls. The reliability of different scoring techniques decreases as time horizon increases. The different Dun & Bradstreet scoring products for example can only predict bankruptcy with relative certainty a year before it occurs. In order to highlight the importance of the network of affiliated firms, I doubled the longest time interval provided by Dun & Bradstreet. Hence, the information regarding the evaluation of possible bankruptcy is lagged by two years. The dependent variable is a binary variable taking the value of one if a firm was still operating two years after the date of data collection and zero if it failed. The dichotomous dependent variable and the relatively short time-span support the use of logistic regression. The regression parameters are expressed as log odds associated with unit increase in the predictors which are transformed into probabilities when necessary in this study (Cohen et al. 2003, Roncek 1991).

Customer-set connectedness. I argued above that banks that provide services to connected customer-sets gain information benefits. In order to capture this unique property and measure customer-set connectedness I employed socio-metric techniques in the Survey of Norwegian Firm and Network Financing 2001. I collected affiliation data of focal firms and their main suppliers and customers. In total, 1498 inter-firm dyadic relations and all firm banking affiliations were identified. I counted the

number of relations that each bank received. Receipt of a relation is defined as the provision of financial services to the main supplier, or customer, of a focal firm. In line with Bonacich's (1987) conceptualization of informational availability as a function of the information of those to whom an actor is connected, a bank, which provides services to a customer set that other organizations seek, is more informed than a bank that provides services to a customer set which is not particularly sought by other organizations. In controlling for the effects of ties that are channels for information and resource flow, Soda, Usai and Zaheer (2004) employed a very similar operationalization in measuring the connectedness of Italian TV production project teams. Hence, by adding the *total number* of those relations that *each bank* services I distinguish between banks in accordance with their overall customer-set connectedness.

There are two qualifications for this measure. First, the count of relations per bank was divided by the total number of relations reported resulting in a percentage measure that could be compared across banks. Second, in order to control for the possibility that relations were recorded merely due to network size, I controlled for *bank size* by dividing the relation ratio mentioned above by bank size. Bank size was measured as its market share. Market share is the sum of the number of customer per bank divided by the total number of bank business customers. Market share was also calculated in terms of bank assets.

Mediator investment-based specialization. Bank specialization evident from the distribution of affiliated organizations was measured in terms of bank concentration of activities in a specific industry. This measure is in line with previous research on knowledge spillover (Jaffe 1989, Jaffe et al. 1993). Using the Statistics Norway's, the official Norwegian bureau of statistics, modification of the NACE

industry classification scheme (similar to the SIC), I divided the sample to 132 different industries and constructed the measure by computing the ratio of the total loans of actors affiliated with bank $_j$ and operating in industry $_i$ divided by the total number of loans to all industries granted by bank $_j$.

In order to capture this specific effect of mediator investment-based industry specialization while excluding other explanations I included three more control variables. First, the *bank regional investment* was measured by the percentage of banks loans taken in the same region as the firm in question out of all banks loans. Second, the embeddedness of a bank in a region was measured by the bank's regional market share. The two measures assist in controlling for regional effects originating from banks that service high proportion of one industry because that industry is geographically concentrated or that the bank is regionally concentrated. Third, in order to isolate the effects of increased value merely from affiliation size as argued by network economists (e.g. Katz and Shapiro 1985), I controlled for mediator *customer size-based specialization*, the number of firms from the same industry as the firm in question that are affiliated with the same bank. By combining the measure of mediator investment-based specialization and customer size-based specialization, I separate the effects of the number of affiliates and the effects of their respective importance.

Firm-banks network concentration. The specific configuration of the firm-banks relationship is measured by the Hirshman-Herfindahl index (e.g. Baker 1990, Uzzi 1999). The measure captures the different ties existing in a firm's network. As the index approaches 1 a firm has an exclusive relationship to one bank. The firm consolidates its financial transactions with that bank using an exclusive tie and maintains relatively few arms' length ties to other banks. As the index value decreases, a firm distributes its banking transactions among a larger number of banks

and it maintains a larger number of arm's length relations. Due to the sensitivity of this measure to firm-banks *network size*, I controlled for network size operationalized as the number of banks that the firm in question maintains banking relationships with.

Firm Status. Banks can be argued to decide to assist firms experiencing financial distress and hence prevent their bankruptcy due to the firm own status in the economy. This may be done regardless to information about or the economical evaluation of the firm. To control for this status-based argument I conducted a content analysis. I utilized a database, Atekst, which contains all the major Norwegian newspapers including those, which specifically specialize in business and economic issues. The number of times the name of each firm had been mentioned in the 5-year period prior to the date of data collection was weighted by the a) severity: the positive or negative nature of the statements about each firm and b) focus: the extent to which the article was focusing on the firm mentioned.

CEO and ownership networks. Firm survival can be argued to be dependent on the nature of the social networks that its managers and owners are involved with (e.g. Davis and Mizruchi 1999). In order to control for this line of reasoning, in computing *CEO network size* I not only examined the number of ownership positions that CEOs maintained in other firms but also the number of other CEO positions that those CEOs held. In order to control for the CEOs access to resources, I computed *CEO network value*, the average size of those firms (either partially owned by the CEO or where the CEO of a firm in my sample is also a CEO of another firm). I also controlled for *ownership network size* and *ownership network value* by measuring both the number of outside ownerships that the firm owners maintained and the relative size of those investments.

A note on second order network effects. An impressive body of work has established theoretical and empirical links between first order networks and actor performance (For a review see: Burt, 2000). In order to ensure that second order network effects hypothesized in this research are not spurious, this research controls for four different first order networks effects. While the vast majority of network research examines merely one type of network (e.g. Uzzi 1997), by examining firm-banks networks, intra-bank networks, CEO network and ownership network, this research is one of the growing number of network based research that focuses on two or more networks simultaneously (e.g. Hedström et al. 2000).

Organization size. Previous research has provided support for the assertion that firm size has a significant negative impact on organization failure rates (e.g. Baum and Mezias 1992). Small organizations may need to stretch their resources to their limits and may be prone to failure due to relative minor changes in, for example, interest rates or short-term capital availability. Larger organizations are less likely to fail due to the higher likelihood of assets accumulation, the option of down scaling operations as well as their established reliability and accountability (Hannan and Freeman 1989). Organization size is measured in terms of the average income over two years.

Organization age. Young organizations are prone to higher failure rates due to the liability of newness (Stinchcombe 1965) which implies the lack of experience and knowledge of the rules of the game (Baum 1996), the inability to maneuver in the external environment and the lack of legitimacy. Taking an information gathering perspective, the uncertainty surrounding a firm decreases in a non-linear manner with time, as third parties are able to gather reliable information about the firm by comparing and contrasting for example previous annual reports. Consistent with

financial economic literature (Petersen and Rajan 1994) and organization ecology literature (Baum and Mezias 1992) organization age is measured by the natural log of the number of years since founding date minus two.

Environmental uncertainty. I controlled for industry level environmental uncertainty by computing the coefficient of variation (Tosi et al. 1973). The coefficient of variation was measured by calculating the volatility of sales over 5 years for each of the 132 industries utilized in this study. I first computed industry average sales per year. Thereafter I summed the one fifth of the squared term of an industry average sale for each year minus the average sales of each industry over the five-year period. I divided the square root of the sum by the average sales of each industry over the five-year period. All else equal firms operating in volatile industries are expected to fail at higher rate than firms operating in relatively stable industries. *Metropolitan area*. In order to control for potentially differing failure propensities for firms located in urban areas and those located in rural areas, I included a dummy variable, which takes 1 when a firm is located in or in the vicinity of a metropolitan area. *Industry control*. I included seven industry specific dummy variables to control for industry specific effects that could have affected firm survival chances.

Indicators of financial distress. Financial ratios were utilized to account for the effects of current financial situation on the likelihood of bankruptcy. I control for the financial indicators proposed by Altman (1983) who tailor-made previous models to fit to non-public incorporated firms. I include the following ratios; (1) *current ratio*: current assets minus current liabilities divided by total assets, (2) *earning ratio*: earnings before interest rate expenditure and tax divided by total assets, (3) *equity ratio*: book value of equity divided by the book value of total liabilities. Organizational studies usually assume that financial indicators are simply mediators

of the competitive situations affecting organizations. In order to ensure that I study firms with a comparable risk of failure I include the above-mentioned financial indicators. By including those indicators I reduce the likelihood of finding significant relations however I also considerably reduce the likelihood of finding spurious relations. *Organization growth*. Firms experiencing different growth rates are also likely to differ in terms of their likelihood of failure. Building upon Weinzimmer, Nystrom and Freman's (1988) suggestion for the measurement of organization growth, I included firm growth of assets to supplement the three financial ratios already used.

The performance duality between affiliated organizations and mediators implies that it is necessary to examine the impact of properties of the network of affiliated organizations on bank performance. It should be noted that the sample size here is merely of 30 banks. However, no previous research in financial economics, organization theory or strategy had access to such detailed data to be able to measure customer-set connectedness rather than bank size. In studying loss incurred by banks and the proportion of customer failures within a bank's portfolio of customers, I utilized information from the Firm Bankruptcy Register. The banking relationships of all firms with assets below $50m failing between 1999 and 2001 and reported by the Firm Bankruptcy Register were identified.

Bank loss, the first dependent variable was measured as the standardized average bank loss per failed customer over the three-year period. I summed all bank assets invested in firms that failed a year before the declared bankruptcy and divided by the number of failed customers. The second dependent variable the *proportion of customer failures* within a bank's portfolio of customers was calculated as the percentage of firms that actually failed out of the total number of firms affiliated with

each bank. Unlike the restricted population frame from which firms were sampled for the testing of hypotheses 1 and 2, no limitations, but for maximum firm size were applied on the nature of firms chosen for testing of hypotheses 3a and 3b. *Bank size*. Bank size was measured by the sum of the number of customer per bank. *Bank growth*. I used bank growth to control for bank strategy that may affect bank loss. In banking, growth strategies can be associated with mismanagement and the arbitrary selection of new projects leading to high future losses and eventually to bankruptcy. Bank growth was measured in terms of growth of bank assets invested in organizations over a three-year period.

Results.

Table 1 presents means, standard deviations and correlations for the measured variables. Table 2 shows the results of hierarchical logistic regression analyses estimating the effects of customer-set connectedness, mediator specialization and firm age on the likelihood of survival. Stepwise addition is utilized to show how the model behaves when new sources of heterogeneity are introduced.

Insert Tables 1 and 2 here

Model 1 in Table 2 estimates the effects of economic and ecological variables on the likelihood that a firm is still in business two years later. Both firm age and firm growth marginally impact the likelihood of survival. The economic indicators of distress suggested by Altman (1983) are significant. Geographical location in terms of urban and rural areas and industry controls and industry specific environmental uncertainty do not significantly impact the likelihood of survival.

Customer-set connectedness is theorized to lower the likelihood of customer bankruptcy. Model 4 in Table 2 provides support for hypothesis 1a. The coefficient for customer-set connectedness is positive and significant. This indicates that a

customer-firm affiliated with a bank that is central in business networks above and beyond the expected bank size based connectedness level, increases its likelihood of survival. Employing the technique proposed by Roneck (1991) to evaluate logistic regression coefficients in terms of probabilities, a one-unit increase in customer-set connectedness, holding all other variables at their means, increases the probability of survival by 0.15. To further examine the impact of customer-set connectedness on the likelihood of survival, I examine the independent effect of bank size on the likelihood of firm going bankrupt. Bank size, measured in terms of bank market share of assets, was found to insignificantly impact firm survival ($\beta = 1.43$, s. e. = 1.26, $p = 0.21$). Hence, an independent effect of bank size as a source of influence on the probability of firm bankruptcy suggested by network economists, (Katz and Shapiro 1985) was not supported.

Hypothesis 2 proposes that the greater mediator investment-based specialization, the lower the likelihood of customer bankruptcy. The results presented in Model 5 in Table 2 provide support for hypothesis 2. Mediator customer-size based specialization and regional specialization do not significantly impact the probability of firm survival. However, the coefficient for mediator investment-based specialization is positive and significant.

Hypothesis 1b states that customer-set connectedness is more positively related to the likelihood of survival when a customer-firm is young than when a customer-firm is old. Following Cohen, Cohen, West & Aiken (2003) I mean-centered the age and customer-set connectedness variables and entered the multiplicative interaction term into the logistic regression model. The coefficient for the interaction effect (Model 6 in Table 2) is negative and significant and the model improves the previous model providing support for hypothesis 1b.

Insert Figure 2 here

I plotted the interaction effect between firm age and customer-set connectedness by using the predicted probability of survival (Roncek, 1991). As depicted in Figure 2, the slope for the likelihood of young customer-firm survival is increasing almost exponentially when customer-set connectedness increases. Young firms increase considerably their likelihood of survival when affiliated with banks having high customer-set connectedness. Firm success is not sensitive to customer-set connectedness when firms are older. Finally, Model 6 also indicates that for fast growing firms, bank specialization in their respective industries significantly impacts their chances of survival.

An alternative argument to the theory advanced here which is based upon the relational mechanism, is that the greater the firm-banks network concentration, the lower the likelihood of firm bankruptcy. As shown in Model 2 in Table 2, the coefficient for firm-banks network concentration is positive but insignificant. As expected firm-banks network size is negative but it is insignificantly associated with firm survival. The above suggests that information flowing between bank managers and entrepreneurs does not assist the former in detecting early signs of firm failure.

Model 3 in Table 2 examines another alternative argument, which implies that banks support firm of high status. The findings indicate that bank-managers decision whether or not to assist firms in financial distress is negatively affected by firm status. A firm's celebrity status can indicate the firm's engagement in nonconforming behavior rather than success (Rindova et al. 2006). Finally, the interlocking directorate literature (e.g. Davis and Mizruchi 1999) has established that the networks in which managers and board members of large listed firms are embedded affect access to information and resources to firms. I tested the impact of CEO and

ownership networks on small and medium size firms' survival on a smaller sample of firms for which such governance data are available. *CEO network size* and *CEO network value* had no impact on survival probabilities (β = .579, s. d. = .446, p = .195 and β = *-.038, s. d. = .136,* p = .780 respectively). *Ownership network size* and *ownership network value* did not impact survival probabilities (β = -.097, s. d. = .395, p = .801 and β = *-.023, s. d. = .230,* p = .922 respectively).

The performance duality between affiliated organizations and mediators implies that it is necessary to examine the impact of properties of the network of affiliated organizations on bank performance. Table 3 presents means, standard deviations and correlations for all measured variables. Tables 4 and 5 present the estimators for OLS regression.

Insert Tables 3, 4 and 5 here

Model 1 in Table 4 contains the control model and model 2 the full regression model. Hypothesis 3a states that the greater customer-set connectedness, the lower the bank loss. Customer-set connectedness is significantly and negatively associated with bank loss per failed customer. Bank growth and bank size do not significantly impact bank loss. Similar results were obtained when variables were measured using a two-year window. To supplement this analysis I also examined to what extent customer-set connectedness affects the proportion of customer failures within a bank's portfolio of customers. The positive and significant findings reported in Model 2 in Table 5 support hypothesis 3b. Hence, not only banks having connected customer-sets enjoy benefits in terms of lower loss per failed customer mainly due to the receipt of early distress signals, but also their affiliated customers are less likely to fail due to better selection processes.

Discussion

The objective of the paper was to enhance our knowledge of organizational failure and mediators. I examined the impact of the structure of organizational affiliation on affiliated organizations and mediators performance in the context of organizations that create value by facilitating exchange relations. I found support for the argument that organizational affiliation with mediators impact small and medium size firm survival as well as bank performance. Customer-set connectedness and investment-based industry specialization were found to increase the likelihood of small and medium firm survival. The central ecological variable age moderates the relation between customer-set connectedness and firm survival. Young firms have yet to develop appropriate resources, relations, capabilities and knowledge and thus benefit the most from being affiliated with knowledgeable and well-informed mediators. Old firms do not gain survival benefits from being affiliated with those mediators. Growing firms were shown to get the full benefit of mediator specialization. Their likelihood of survival is increasing rapidly when they growth fast and their mediator specializes in their respective industries.

I additionally found support for the argument that mediators, which affect the network of affiliated organizations, are affected by the properties of the networks that they serve. Network composition was found to matter. Bank loss per failed customer and the proportion of customer failures within a bank's portfolio of customers, decrease as customer-set connectedness increases.

The findings are constrained by the limited number of network properties studied and the scope of my data. I focused on the impact of customer-set connectedness and subgroup specialization on firm survival. Future studies should develop upon this initial empirical attempt to carefully investigate the relationship

between different affiliated network properties and the return to affiliated firms and mediators. Network conceptualization, originating from a long tradition in sociology of studying networks might be employed in conjunction with the relatively new economic explorations of networks (Economides 1996, Katz and Shapiro 1985).

The current study highlights the benefits the flow from being affiliated with a mediator whose composition affects its effectiveness in executing mediating services. Future research should augment the bank-focused perspective presented with customer ego-centered network perspective. A within-bank analysis can substantially enrich the current research by specifying the relations between bank network properties, individual firm ego-centered network properties and firm and mediator performance. Future work should further theorize and test the impact of different network properties of individual firms, like structural holes, on firm survival as well as other crucial performance parameters. In the context of banking, parameters such as the cost of capital and availability of capital to small and medium size enterprises are obvious candidates.

The geographical specificity and the cross-sectional nature of the data constitute further limitations of this study. Although the Norwegian banking system shares a variety of characteristics with other banking systems, like having similar number of banking relationships to those maintained by U.S business customers, future research should explore the applicability of the theory presented in both relationship and market based banking systems. Longitudinal studies are further necessary to establish the link between the underlying network of affiliated organizations and the performance of affiliated organizations and mediators.

The paper advances organization theory and strategic management in various ways. First, the paper extends the growing literature on market mediation (Khurana

2002, Obstfeld 2005, Zuckerman and Kim 2003). I examined how the network of affiliated actors affects the effectiveness of mediating services and the performance duality. Value is derived not only through superior search and legitimacy as argued by the triadic-based market mediation research (Baker and Obstfeld 1999, Khurana 2002) but also from membership in a collective and from the properties of the collective. Previous research examined actors that occupy a middle position and amend, substitute or establish ties. The current study extends this by examining a class of mediators that occupies a central structural position and facilitates exchange ties. Mediating organizations facilitate ties between affiliated network members. They influence members' success and are simultaneously affected by their members.

The lack of research into the operation of the mediating organizations is startling considering the central role of mediating organizations in economic life (North 1991). There is a large vacuum in organizational studies of mediating organizations and the mechanisms by which value is created in the context of such organizations. The paper provides some evidence concerning the impact of mediating firms and their networks on the ultimate performance measure namely firm survival and invites scholars to fill in the theoretical and empirical voids. Future studies should extend this research to examine the membership properties of related mediating organizations such as insurance companies, investment banks and security brokers and their impact on competitive advantage of such firms.

Second, I contribute for the fundamental search for the sources of competitive advantage. The empirical evidence suggests that, at least in mediation, the network of affiliated organizations is a source of competitive advantage to both affiliated organizations and mediators. Taking the industry structure view (Porter 1980), it is challenging to include the network of affiliated organizations in Porter's five forces.

Are mediators' affiliated organizations suppliers, customers, or both? (Stabell and Fjeldstad 1998). Taking the resource based view (Barney 1991) it is challenging to explain the distribution of organizations across mediators and their impact on performance purely in terms of intra-mediator specific resources or capabilities, or its inter-organizational relations (Dyer and Singh 1998). Future research should evaluate how well established strategic models, like Porter's five-forces, can be amended to take in account mediating organizations. Research has already advanced the value network and shop models to supplement the value chain (Stabell and Fjeldstad 1998).

The study provides a new avenue for network research. Network studies have been paying much attention to intra-organizational and inter-organizational networks conferring benefits and creating obstacles to economic actors (e.g. Granovetter 1985, Powell et al. 1996). The studies focus on network, which are sparsely connected, decentralized, and cliquey with "shortcuts" (Baum et al. 2003). Network studies that explicitly address the role of mediators are generally lacking from the broad scope of network studies (Krackhardt 1999). This research calls for further network inspired research into conditions under which the set of affiliated actors impacts traditional network affected phenomena such as innovation and change. Future research should further explore how networks that contain actors that create value by facilitating exchanges and work on improving their networks differ from those that do not contain such actors.

The study also contains implications for contemporary banking theory. The isolated impact of concepts such as transaction costs and information asymmetry explaining bank existence are being called into question (Allen and Santomero 1998, Thakor 2000). Financial intermediation theory is in a great need for theoretical renaissance to be achieved by challenging the assumptions of the current paradigm

(Thakor 2000). Rather than continuing conceptualizing banks as mediating only between depositors and borrowers, by relinquishing the assumption of actor independence in the economics of banking, new insights about banks emerge. I suggest that banks can also be conceptualized as facilitating real-life direct exchange relationships and the exchanges facilitated, and those not facilitated, determine banks' as well as affiliated customers' performance. Thus, the paper provides new possibilities for further development of contemporary banking theory.

The findings suggest important managerial implications. From the affiliated organizations perspective, it suggests that the choice of a financial institution is not trivial but of vital importance to organizations. Banks that service related industry customers and which are embedded in connected customer-sets are more attractive to firms than non-specialized and sparsely connected banks. Taking a bank perspective, a specialized and connected bank is more likely to attract good projects or alternatively select such projects successfully. Banks face the strategic challenge of organizing activities and structures in order to foster the development and utilization of internal information markets, which decrease their losses.

In conclusion, this study establishes that the properties of the underlying network of affiliated organizations affect the effectiveness of the service rendered by mediating organizations. The network of affiliated actors impacts the survival of affiliated organizations as well as the performance of mediating organizations. The research further articulates the mediating concept by extending its scope and by introducing both a network perspective and the property of duality. The study also provides evidence that the sources of performance differentials between organizations do not necessarily reside within an industry or within firm boundaries but in the composition of customer affiliation networks.

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TABLE 1
Means, standard deviations, and correlations

	Variable	Mean	s. d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Survival	0.49	0.50																
2	Organization age	1.02	0.31	.20*															
3	Organization size	32508	45372	.04	.21**														
4	Organization growth	68.33	47.13	.11*	-.11*	-.08													
5	Current ratio	-0.05	1.51	.14*	.07	.05	.03												
6	Earning ratio	0.00	0.31	.36**	.06	.05	.06	.56**											
7	Equity ratio	0.27	0.73	.35**	.20**	.09*	.03	.20**	.23**										
8	Environmental uncertainty	0.01	0.05	.00	-.06	.03	.30**	.05	.04	.08									
9	Metropolitan area	0.51	0.50	.03	.04	.01	.09*	-.06	-.04	.00	.05								
10	Firm-banks network concentration	0.93	0.13	.14*	-.05	-.14*	.03	.00	.10*	.07	.03	.07							
11	Firm-bank network size	1.73	0.83	.00	.24**	.22*	-.05	.05	.04	.07	-.07	-.05	-.57**						
12	Firm status	0.03	0.89	-.07	-.04	-.04	.02	.01	.03	-.05	.03	-.03	-.04	-.05					
13	Customer-set connectedness	0.99	0.40	.12**	.06	.09*	.02	.04	.00	.07	-.05	.13**	.09*	-.12**	.01				
14	Bank regional market share	9.03	8.03	.06	-.03	.16*	-.06	-.04	-.02	.05	.03	.28**	.06	-.04	.01	.11*			
15	Bank regional investment	21.77	13.06	.02	.01	-.01	.02	.03	.00	.10*	.06	-.04	.11*	-.13**	.02	.00	.01		
16	Mediator customer-size based specialization	1355	2227	.12**	.01	.03	-.04	.04	.02	.13*	-.14**	.15*	.03	-.09*	-.06	.38**	.09*	.16**	
17	Mediator investment-based specialization	2.21	3.56	.12**	.03	.04	.03	.03	.01	.00	.00	.02	-.08	.09*	-.04	.00	.07	-.10*	.17**

N = 462, * $p < 0.05$, ** $p < 0.01$

TABLE 2
Results of hierarchical logistic regression on the likelihood of survival

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Organization age	.790†	.889†	.942*	.888	.916†	2.507**
	(.455)	(.467)	(.476)	(.480)	(.491)	(.798)
Organization size	-.064	-.024	-.030	-.054	-.076	-0.023
	(.114)	(.117)	(.119)	(.120)	(.125)	(.132)
Organization growth	.005†	.005†	.005†	.005†	.006*	.045**
	(.003)	(.003)	(.003)	(.003)	(.003)	(.012)
Financial ratios						
Current ratio	2.024**	2.061**	2.081**	2.125**	2.046*	1.447†
	(.739)	(.755)	(.767)	(.773)	(.793)	(.842)
Earning ratio	5.869**	5.626**	5.797**	6.012**	6.038**	6.293**
	(.947)	(.953)	(.965)	(.982)	(1.002)	(1.074)
Equity ratio	2.457**	2.559**	2.560**	2.499**	2.502**	3.153**
	(.606)	(.631)	(.632)	(.622)	(.635)	(.705)
Environmental uncertainty	-2.663	-2.388	-2.134	-1.254	-1.908	-1.001
	(2.915)	(2.983)	(3.042)	(3.081)	(3.206)	(3.412)
Metropolitan area	.174	.123	.073	.001	-.036	-.018
	(.255)	(.258)	(.260)	(.265)	(.283)	(.298)
Firm-banks network concentration		1.562	1.285	1.124	1.219	.352
		(1.179)	(1.187)	(1.202)	(1.249)	(1.271)
Firm-banks network size		-.127	-.189	-.154	-.174	-.302
		(.186)	(.188)	(.191)	(.196)	(.208)
Firm status			-.308*	-.329*	-.333*	-.304*
			(.141)	(.142)	(.143)	(.150)
Customer-set connectedness				.755*	.855*	1.339**
				(.326)	(.370)	(.444)
Bank regional market share					.014	.014
					(.018)	(.020)
Bank regional investment					-.410	-.129
					(1.002)	(1.071)
Mediator customer-size based specialization					-.074	.122
					(.153)	(.161)
Mediator investment-based specialization					.362*	.660†
					(.173)	(.353)
Customer-set connectedness x organization age						-.040*
						(.016)
Organization growth x Mediator investment-based specialization						.078**
						(.021)
Constant	-2.294**	-3.656*	-3.364*	-3.996**	-4.088**	-7.446**
	(.638)	(1.429)	(1.442)	(1.484)	(1.529)	(1.888)
Log-likelihood	-412.18**	-407.20†	-403.31*	-396.84*	-390.07	-360.58**
Degrees of freedom	14	16	17	18	22	24

Standard errors are in parentheses; N = 462. Industry dummies are excluded from the table.

† $p < 0.10$

* $p < 0.05$

** $p < 0.01$

TABLE 3
Means, standard deviations, and correlations

	Variable	Mean	s. d.	1	2	3	4
1	Bank loss	700181	367664				
2	Bank growth	1.51	.27	-.02			
3	Bank size	13659	25885	-.20	.06		
4	Customer-set connectedness	.97	.53	-.52**	.04	.13	
5	Proportion of customer failures	1.79	.41	.18	.20	-.05	-.54**

N = 30
** P < 0.01

TABLE 4
OLS regression estimates of bank loss

Variable	Model 1	Model 2
Customer-set connectedness		-.548** (0.179)
Bank growth	-.081 (.404)	.026 (.354)
Bank size	-.117 (.106)	.078 (.094)
Intercept	.021 (.623)	.429 (0.563)
R^2	.043	.297
F	.608	3.660*
ΔR^2		.254
F		9.385**

N = 30
* P < 0.05
** P < 0.01

TABLE 5
OLS regression estimates of the proportion of customer failures per bank.

Variable	Model 1	Model 2
Customer-set connectedness		-.516** (.168)
Bank growth	.460 (.352)	.261 (.314)
Bank size	-.029 (.109)	-.001 (.096)
Intercept	1.240 (.537)	2.504 (.538)
R^2	.062	.312
F	.896	3.936*
ΔR^2		.250
F		9.453**

FIGURE 1

Figure 1a
The atomistic conceptualization

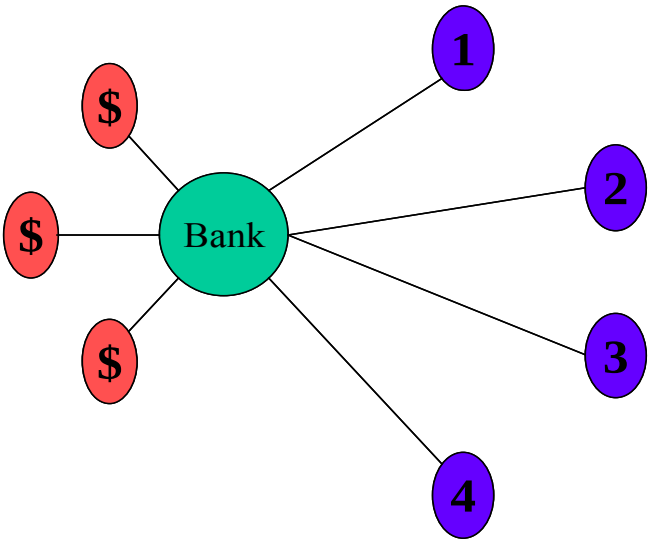

Figure 1b
The connected conceptualization

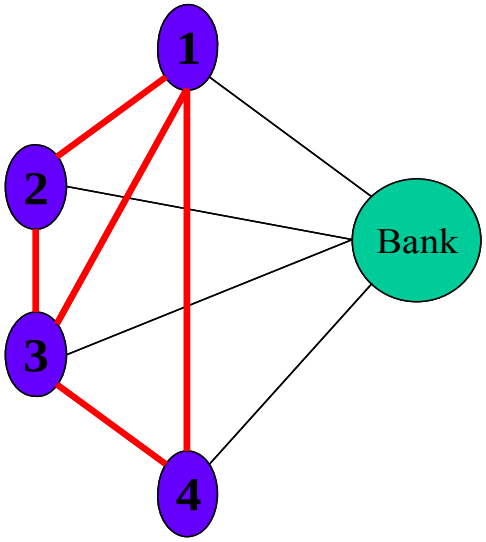
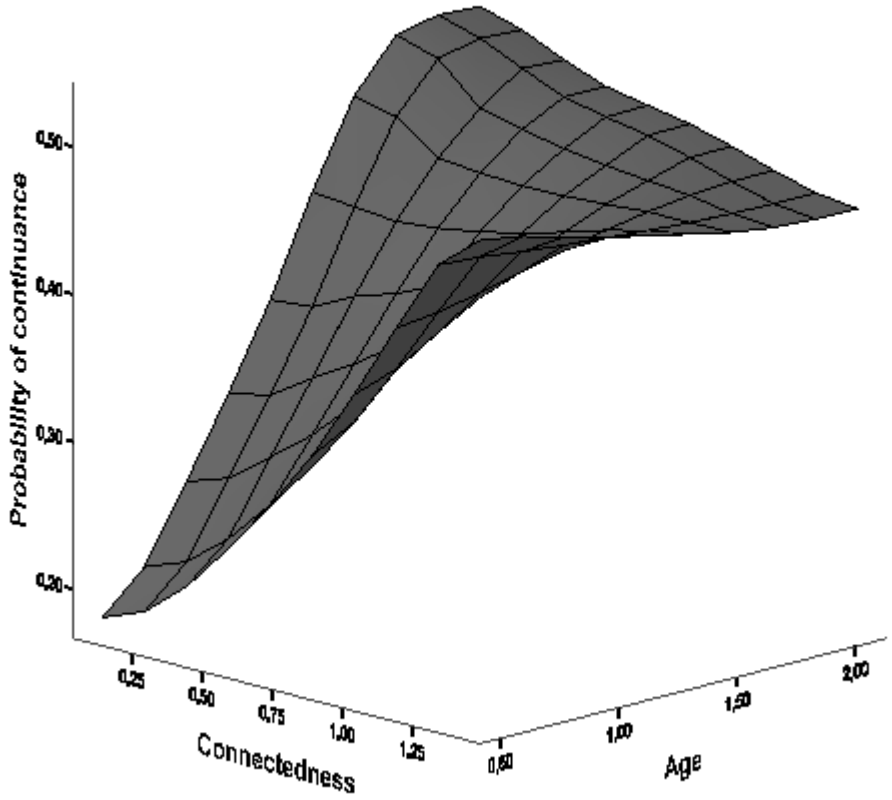
FIGURE 2
Interaction effect between customer-set connectedness and firm age