

# The Stability and Change of Business Networks Revisited – Use the Forces!

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## Abstract

The dynamics of business networks have been handled quite vaguely in the business network research. Getting to the change can be quite problematic, and that can be one reason for the emphasis of stability of business networks. This paper goes deeper into the change of business networks, and proposes dimensions with which business network change can be described. To do so, a change focused approach is used and the studied business network is treated as an entity rather than setting focus on the parts of the business network.

This study concerns the turbulence of the Swedish IT-companies, among which many mergers, acquisitions and bankruptcies took place during the 1990s and early 2000s. The mergers, acquisitions and bankruptcies are seen as events causing change of the business network, and the turbulence is considered a coherent phenomenon by regarding each event as a radical force that affects the over-all development of the studied business network. The over-all business network change is thus seen as the result of all the different forces occurring within the business network.

Business networks and business network dynamics can be seen, described and approached in different ways. This study focuses on the occurrence of changes, and uses the character of the forces and changing parts of the business network to describe the overall change. Basically, a business network is considered to be more changing if many, and various, individual changes occur widely spread in the business network, whereas a small number of changes within a limited part of the business network could make the business network appear rather stable. Business network change is suggested to be described through two dimensions: the intensity and extension of the change. These dimensions, and suggested components of them, are described in this paper.

**Keywords:** business network dynamics, forces, mergers and acquisitions, intensity, extension

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## Introduction

During the 1990s and 2000s, many and large changes took place among the Swedish IT-companies. After the many start-ups, where the realization of vivid ideas based on the technological advancements was attempted, followed a period where quite a number of these companies faced economic problems, and even went bankrupt. During this time, also many mergers and acquisitions (M&A) took place, involving IT-companies as well as crossing industry boundaries.

From a business network perspective, this situation of change among the IT-companies, with many mergers, acquisitions and bankruptcies, can be seen as a situation containing a great deal of change of the business network in which the IT-companies are part. As a company goes bankrupt, the business relationships of that company are likely to be terminated, which is a serious change of the business network. Likewise, when two companies consolidate through M&A, the two nodes in the network become one, inevitably altering the structure of the business network. The turbulence among the IT-companies thus offers a great opportunity to consider more radical development of business networks, and is a good basis for looking further into the dynamics of business networks.

Twenty years have now passed from the publication of Gadde and Mattsson's article "Stability and Change in Network Relationships" in the International Journal of Research in Marketing in 1987. Since then, the dynamics of business relationships have received quite some attention whereas the dynamics of business networks have been left behind and have been handled quite vaguely (Anderson et al., 1998). A quite common basic assumption concerning the nature of business relationships is that they are long-term oriented and quite stable. However, it has been found that the business relationships and business network are constantly changing, thereby being, rather, in a situation of stable change (Gadde & Håkansson, 1992; Gadde & Mattsson, 1987; Håkansson & Snehota, 1995). But what do these descriptions of the stability and change of business networks actually say? Are business networks characterized by stability or change? Does it differ if looking in the short or long run? How can business network change be described?

This paper revisits the stability and change of business networks by looking further into how business network change can be approached and how the character of business network change can be described. Understanding how business networks change is a much too wide aim for one paper, but instead of dismissing the problematic topic by vaguely describing business networks as "stable, yet constantly changing", this paper tries to go deeper into the change of business networks. It is reasonable to assume that business network change is complex and heterogeneous, and more attention should be directed towards understanding the change, mechanisms and nature of business networks.

## Approaches to Business Networks

The concept of business networks is merely a description of the structure of interdependences among actors, and there is nothing but the application and definition of the concept that decides what a business network is and what it looks like. The business network approach can be seen as a tool or map which can be helpful for describing, explaining and understanding business. However, the business network is a conceptual phenomenon, so we cannot study the *object* 'business network' but only the *concept* 'business network'. This enables the possibility of attributing various meanings to business networks, and the flexibility of the concept has resulted in different interpretations and usage of the business network idea. Even within the definition of business networks as connected business relationships, different views of the business network is

possible. For the sake of this reasoning's simplicity, two types of business network views will be distinguished: a relational view and a structural view.

The relational view clearly emphasizes and takes an interest in the parts constituting the business network, i.e. the actors, the business relationships and the connections between them. A group of business relationships is, however, not necessarily a business network, as connectedness is a prerequisite for being able to describe a number of business relationships as a business network (Anderson, Håkansson & Johanson, 1994; Blankenburg Holm & Johanson, 1997). It is sometimes claimed in this kind of research that the business relationships are embedded in a network context, although the network dimension is not developed more thoroughly (e.g. Chetty & Eriksson, 2002; Hedaa, 1993). A business network study with a relational view can, for example, be concerned with how one business relationship is affecting, or is affected by, other business relationships. Therefore, some traditional business network studies can actually be said to deal with "sets of connected relationships" forming business networks (cf. Anderson, Håkansson & Johanson, 1994, p.1). It is not the business network at large that is of interest, but rather the parts of the network.

With an emphasis on the actors, business relationships and connections within the business network, the point of departure also lies in the parts of the network. Some specific actor or business relationship can be of interest for some reason, for example interesting technology (e.g. Anderson, Håkansson & Johanson, 1994; Waluszewski, 1990), changes of the actor (e.g. Bångens & Araujo, 2002) or perhaps specific characteristics of the business relationship. Studying the business network surrounding this focal point is, thereby, a matter of identifying business relationships that are connected to the focal business relationship or to the business relationships of the focal actor. By taking an actor or business relationship as the central point of the business network and, thereby, studying the network as the business relationships surrounding this central point, the business network becomes the context in which the particular actor or business relationship acts (Snehota, 1990). Network context has been discussed in previous research as the connected business relationships that an actor considers relevant, and is more or less directly affected by (Blankenburg Holm, 1996; Grabher, 1993; Håkansson & Snehota, 1989; Snehota, 1990). The limited number of business relationships that are of great importance to the actor or its business relationships are, thus, what makes up the business network context (Thilenius, 1997).

The structural view is a kind of holistic approach to business networks. It sees the business network as an entity and deals with network-wide issues. Such an approach implies a different focus, treating the business network more as a structure, but the primary interest of these studies is often something other than furthering the business network idea. Describing the evolution of a business network surrounding technological development is one example of what such studies may be directed at (e.g. Lundgren, 1995; Waluszewski, 1990). Cook (1982, p.177) describes a shift in the focus of social network research, that the advances "have moved exchange analysis from a focus on relatively isolated dyadic exchange relations at the micro-level to a more macro-level consideration of exchange systems where dyadic relations are viewed as components of larger social structures". This could also be interesting from a business network point of view, so an alternative way of addressing business networks is to focus on the structural aspects of business networks rather than the constituent parts. The business network is, thus, seen as a structure with characteristics and functions. Such an alternative way to study business networks is based on the same assumptions as the traditional business network studies, i.e. reciprocal long-term business relationships and connections between the business relationships, but the difference is how the business networks are approached.

Some research on business networks has addressed structural aspects of networks, although the meaning of 'structure' is often not defined. Håkansson and Johanson (1993) describe the structure of the industrial network as constituted by the "patterns and character of the connections between the relations" (p.42), and further claim that the network structure is formed and modified through the interaction within the structure. Håkansson and Snehota (1995) regard the business relationships as part of a broader network structure, and later claim that the business relationships are elements making up the network structure, whereas Easton (1992) focuses more on the actors, as structure "is based upon firms as the elements of structure" (p.17). Structural aspects of business networks in some literature are, however, mentioned without any specific explanation, and are sometimes almost synonymous with 'business network' (e.g. Benassi, 1995; Halinen & Törnroos, 1998; Thilenius, 1997). Another example is the use of the 'structuring' of a business network to label the formation of the network (Uusitalo & Möller, 1997). Also vague is Covielli (2005) who refers to a structurally hard network dimension in opposition to an interactionally soft dimension.

Some have also touched upon the different characteristics of network structures, which is a clear illustration of this approach's view of the business network as an entity. The research on social networks has, for example, made use of structural characters such as the size (Anderson, Butts & Carley, 1999), density (Anderson, Butts & Carley, 1999; Breiger, 2003; Scott, 2000) and centrality (Freeman, 1979; Gomez et al., 2003; Zemljic & Hlebec, 2005). Concerning the effects of a business relationship dissolution, Alajoutsijärvi, Möller and Tähtinen (2000) claim that a 'tightly structured' network enables a beautiful exit. What makes a business network tightly structured is, however, not specified. Other aspects of possible characters of business networks are the density and size of the network (Coviello, 2005, p.41) as well as the power distribution (Forsgren & Olsson, 1992). The structural character of business networks will not be furthered in this paper. Instead, the point is that focus is not on the components of a business network, i.e. the actors, business relationships and connections, but rather on the business network as an entity.

### **Approaches to Business Network Change**

Depending on the view, business networks are studied differently and business network change is apprehended differently. Following the described dichotomy of how business networks can be viewed, studying change of business networks can be done with an origin either in the parts of the business network, or in the business network as an entity. Furthermore, business network change can be studied based on either the business network or the changes. The former approach, which appears to be the most common, is certainly an interesting and powerful approach, but it naturally also has some shortcomings, which might have come to limit the advancement of business network studies. One way to perform such a study on business network change, originating in the business network, is to describe a certain (delimited) business network at different points in time as different states, or as a process. Such a study thus originates in the studied business network and, depending on the method, somehow learns about the changes either explicitly or through analysis of differences. What tends to dominate in this kind of studies, are the parts of the business network that remains intact, since the actors and relations that do not change are included throughout the entire study. This naturally sets focus on the ongoing relations, and the lasting actors, rather than the changes. The result could be that the stability of business networks, and the limited degree of change, is overemphasized.

The literature on business networks has been shaped by a preference for stability, and the nature of business networks is often described as "long-term", "stable" or even "stable yet constantly changing". A contrasting approach to business network change is to focus the changes rather than the continuing structure. Whereas the first alternative might be less inclined to capture

change, and tending towards capturing stability, the second option is very apt to capture changes, but might miss out on much of the stable parts.

This study does not set out to disprove the notion of a general stability of business networks, but it does have a desire to gain more understanding of the business network change. So, for that reason, in combination with the merger wave among the Swedish IT-companies, which provides a situation of much change, this study pursues a change focused approach. Through this, business network change can be studied more closely which, potentially, contributes to the understanding of business network in general.

The individual changes can, in a business network setting, be of various kind, for example adaptations within a business relationship or the ending of a business relationship. These changes are, in turn, descriptions of concrete actions, such as alterations of a product or a ceased purchasing of a particular component. Each of these individual changes can be seen as a force affecting the business network, and the over-all business network change is a result of all the forces acting upon it. This kind of approach has been described by Håkansson and Henders (1995), and will be continued in this paper. Business network change is thus described through the forces of change that occur within the studied business network, which is delimited by some criteria, for example technology, geography or affiliation, and that makes up the change of that business network.

## **Types of Forces**

Changes are by some divided into two categories: incremental and radical (Gersick, 1991; Halinen, Salmi & Havila, 1999; Kamp, 2005; van de Ven, 1992; Van de Ven & Poole, 1995). Incremental change is described as adjustments within ongoing business relationships, whereas radical change is the break or establishment of a business relationship. It has been suggested that critical events can trigger radical change, and set the business network into a state of radical change, whereas the inertia of the business network acts to move from a state of radical change to a state of incremental change (Halinen, Salmi & Havila, 1999). This suggests that there are some kind of mechanisms in the business network; mechanisms which controls the development of the business network. This kind of mechanisms have, for example, been described in terms of network governance (Jones, Hesterly & Borgatti, 1997), power balancing (Forsgren & Olsson, 1992) and network support (Håkansson & Henders, 1995).

When using forces to approach business network change, one can also describe different types of change, both concerning individual changes and the over-all development of the business network. One can consider some forces to be mainly adaptive in the sense that they do not challenge the existing structure and path of the business network, but is within the domain of the mechanisms. The adaptive forces mainly consist of minor adjustments within the existing business relationships. They are the everyday changes that make a long-term cooperation possible, and being so, they might be hard to identify as they may pass quite unnoticed.

On the other hand are the radical forces. These challenge the existing structure and goes beyond what the mechanisms can handle, thus causing alteration of the structure of the business network. As radical forces per definition are more rare than the adaptive, the actors might be less comfortable with handling them. Examples of radical forces are seriously increased or reduced exchange within a business relationship, (sudden) termination of a business relationship, and mergers and acquisitions.

## Types of Business Network Change

Different types of forces can thus act on the business network. Which over-all direction the business network trajectory will take is however not only dependent on which types of forces that acts in the business network, but also on the network support the different forces meet (Håkansson & Henders, 1995). Each force can be described as a vector, i.e. having both a size and a direction, but they are also components of the overall business network change. The business network trajectory can thus be seen as the resultant of all the forces acting within it and it is, consequently, not just the individual forces that can be of different types, but also the course of the business network can be described as different types. The categorization made here will describe the over-all business network change as either evolutionary or revolutionary (cf. Håkansson & Henders, 1995), illustrated in Figure 1.

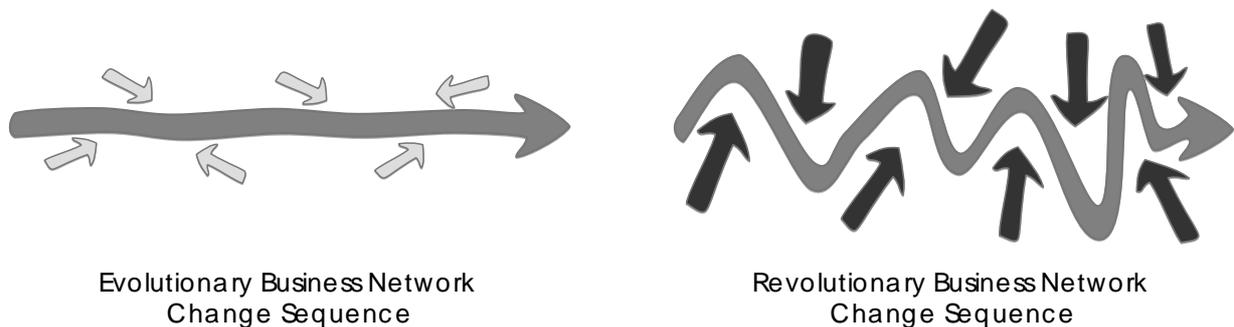


Figure 1 Evolutionary and revolutionary business network change sequences caused by different types of forces.

As business relationships develop, the actors tend to invest resources in them; the commitment increases. As this is done, the exchange in these business relationships is facilitated, but it also results in a stronger and stronger fixing of the business network structure. The evolutionary change course of business networks describes this development of business networks, full of adaptive forces. The everyday, and 'normal', adaptive changes makes the business network evolve gradually, and this can certainly be described as a kind of stability. Although the business network is changing, the change is stabilized by the business network structure and its mechanisms. The evolutionary business network change is thus dominated by adaptive forces. The existing structure prevails and the business network evolves gradually within the governance of the current mechanisms. Business is to a large extent based on successive small adaptations, e.g. gradual product development, which refines the existing structure in different ways. Parts of the business network may gradually dissolve whereas other parts gradually are enforced. The business network do however evolve along a general direction, despite any occasional radical forces, as the majority of the acting forces are adaptive and preserves the business network.

The 'normal' state of evolutionary change is likely to be disrupted by more radical change from time to time (cf. Gersick, 1991). During the revolution of a network, the basic structure of the business network is altered. A revolutionary change of the business network may be caused by reduced possibilities to pursue the current business, for example because of changed control of resources, and revolutionary change results in new business opportunities. It may also be caused by, for example, technological advancements, actors entering the business network and government legislation (Håkansson & Henders, 1995).

Whereas evolutionary change is common and rather well described, revolutionary change is not. This has several consequences, for example that companies might be less comfortable in handling such change, but also that such situations are harder to find as they are not so common. On the

other hand, when revolutionary change does occur, it shows. Studying revolutionary change could thus be a feasible way to further the understanding of business network change, so this study will focus on revolutionary change.

The recent turbulence among the Swedish IT-companies offers an excellent opportunity to find a situation of revolutionary change. Of the many events during the turbulence, this study will focus on bankruptcies, mergers and acquisitions. Start-ups are surely interesting, but due to the nature of business relationships, a start-up mostly involves gradual changes as the development of business relationships is an incremental process (Håkansson & Snehota, 1995). This study is thus limited to radical forces, although also adaptive forces exist in revolutionary change patterns.

## **Describing Business Network Change**

So, by approaching business network change as a process constituted by forces of different size and directions, focus is set on the changes which allows for a nuances view of the stability and change of business networks. Having this way of getting to the change, the next step, which adds the nuances, is to be able to describe business network change. The division of business network change processes into evolutionary and revolutionary types is one way to describe business network change, but following this study's delimitation to revolutionary change patterns calls for ways to describe variations also within this type of change. For doing that, some describing dimensions are needed. The following section will therefore consider dimensions reflecting the intensity and extension of business network change. As the business network change process is a result of the forces influencing the business network, characters of the forces will be used to describe the over-all business network change.

### ***Intensity***

The intensity of business network change reflects how much change that occurs, when it occurs and how radical the changes are. Starting with the *amount* of change, it can, due to the selected approach to business network change, be assessed by looking at the number of forces acting on the studied business network. Quite simple: more forces is interpreted as more intense change.

Although interesting, intensity as the bare number of forces occurring within the studied business network tells nothing about the spread or concentration in time. Change concentrated to a limited and short period of time is different from change spread over a longer period. A continuous change is something different than single occasion change. The intensity dimension of business network change should therefore contain a component reflecting the *temporal spread* of the change. The spread of the change over time can be shown in different ways. With the current approach to business network change, this means how spread or concentrated the occurring forces are over time. The frequency of the changes can be assessed by dividing the occurred forces over the studied time, i.e. is defined as the number of forces/time. The frequency is a relative measure, comparing year by year, but the temporal spread reflects a uniformity of the frequency.

This should either take the strength and direction of the forces into account, or simplify the analysis by filtering out a specific type of forces. As have been mentioned, the empirical phenomena studied as business network change are mergers, acquisitions and bankruptcies. Although they are here treated as radical forces, these events are likely to give rise to different kinds of changes, i.e. they can be seen as both adaptive and radical forces. This study is, however, interested in the radical forces emerging from mergers, acquisitions and bankruptcies, and therefore settles with regarding them as such. Returning to the description of the forces as vectors, there is thus a focus on forces that challenges the prevailing structure. The strength of these forces should be judged by the effect of them, but the expected result of a merger,

acquisition or bankruptcy suggests that these forces are of considerable strength as business relationships ends or actors are consolidated. The studied events are thus primarily regarded as radical forces, but variations are certainly possible. The *radicality* of the force will have to be treated as one character; considering the strength and direction separately is, at this stage, too complicated. It is however possible to ascribe different radicality to the different events, where mergers are the least radical and bankruptcies are the most, and this is one aspect to build an analysis of business network change on. The *intensity* of business network change is consequently seen as a resultant of the amount of change, temporal spread and radicality.

### *Extension*

Whereas the intensity of the business network change, containing the amount, temporal spread and radicality, shows how much change that occurs and how frequent change occurs, i.e. the spread in time, the extension of the change aims at describing how large parts of the business network that change. This is of relevance since it is quite a difference whether the change is confined in a rather limited part of the business network, or if the change involves the entire studied business network. With this force-focused approach, the extension describes the spread of the forces in the business network.

Whereas the intensity was relatively manageable, the extension is not as clear due to its high complexity. Somehow, the business network structure must be described in order to make it possible to place the forces in a spatial dimension. Perhaps the simplest way to look into the spatial extension is to study the spread of the forces, i.e. a low concentration, in certain actors. This *actor extension* is however not a very refined way and does not go deep into the diversity of a network structure. Another way could be to use the network position (cf. Henders, 1992; Johanson & Mattsson, 1992; Marsden, 2002) of the actors involved in the force. A high *positional extension* could mean that the forces act in a variety of positions, although the measure could also be weighted towards emphasising the more central positions.

A third way to make an assessment of the extension of the change is to use the heterogeneity of business networks. One way to describe the heterogeneity of business networks is to consider the technology that dominates different actors and business relationships. Relating this back to the IT-companies, the technology based heterogeneity shows in that, for example, the customers of an IT-company can be in a wide variety of businesses, not to mention the varieties among the IT-companies, ranging from hardware to services. The IT-related business network thus consist of many different types of actors and, consequently, different content of the business relationships. By using a dimension that represents the heterogeneity, the extension can be assessed as the spread of forces in this dimension. Concerning *technology extension*, a high value would mean that the forces involve actors of different technologies, as this shows that the forces act in different parts of the business network. The *extension* of business network change is consequently seen as a resultant of spread regarding actors, positions and technology.

Together, the intensity and extension can be seen as components of the business network change, where the greatest change has a high intensity plus a high extension. These two dimensions describing business network change forms a two dimensional matrix in which a studied business network, during a certain period of time, can be placed (see Figure 2). The unit of analysis is thus a, in some way delimited, business network. Both the intensity and extension is thus evidently relative measures, but they are also useful for describing the change process of a single entity.

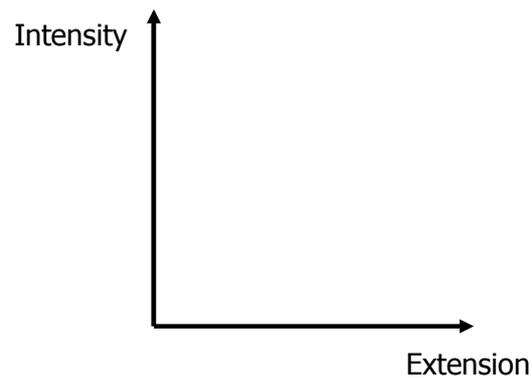


Figure 2 The intensity and extension matrix describing business network change

### Studying Business Network Change

The abstract nature of business networks makes them quite hard to study, and business network change is consequently also problematic to capture. The force-based approach to business network change that has been described in this paper is an important part of making studies of business network change feasible. It also helps in the empirical encounter by emphasizing the events that can be considered to be forces within the studied business network. Still, one issue when obtaining data to study change of business networks is naturally how change can be found. Data and methods that capture the change are required. As the actual changes can be hard to find, an effective way is to look for indicators of change, and in this study, mergers, acquisitions and bankruptcies are used as a proxy for change of business networks since they are likely to cause change of the business network (e.g. Anderson, Havila & Salmi, 2001; Havila & Salmi, 2000; 2002).

It has, by some, been considered to be a clear need for studies of structural change of business networks, and especially longitudinal studies are considered rare (Knoben, Oerlemans & Rutten, 2006). As change is quite different when looked upon in a long term rather than a short term perspective, longitudinal studies are valuable. The nature of business networks may well appear fundamentally different depending on the time horizon, perhaps a long term view reveals a changing nature not visible in short term views.

The setting of this study is made up of IT-related companies in Sweden during the turbulent era which is often referred to as the “IT boom”, “IT crash” or “IT bubble”. Besides all the companies that were started or went bankrupt during this time, many mergers and acquisitions took place, which also makes it an excellent opportunity for studying issues related to such events. Data on the IT-related companies that were involved in mergers, acquisitions or went bankrupt has been collected and coded from news items describing the events over a period of ten years. Also different kinds of relations between companies have been recorded, buyer-seller relationships, ownership relations etc. Although the focus in the data collection has been on IT-related companies in mergers, acquisitions and bankruptcies, all kinds of companies are included in the data as an IT-company can merge with or be related to companies in other lines of business. From the news items, as much data as possible has been noted about the events, actors and relations, which makes a large number of aspects covered. This makes it possible to analyse different aspects related to the changes and heterogeneity of the IT-related business network.

Starting in one particular newspaper (Computer Sweden), the 64 343 published articles in 1994-2003 were reduced to 2 123 through computerized searches, which filtered out those articles containing information about a merger, acquisition or bankruptcy. The searches were followed by manual read through and assessment of the content of each of the 2 123 news items before

coding the relevant data by using a custom designed coding scheme and computer software. Each of the many news items offers a small piece of information to the large puzzle. In all, 3210 companies, 3385 relations and 1407 events (mergers, acquisitions and bankruptcies) are included in the data so far. So the result of this data structuration method is a relatively large amount of interrelated coded meta-data describing mergers, acquisitions, bankruptcies and business relations, which provides a good opportunity to study the change of business networks. The longitudinal aspect is, through the dating of the sources, well covered by the data.

This study thus concerns a business network based on the Swedish IT-companies, but also including companies in various other lines of business, as long as they are related to any of the IT-companies. This studied business network, referred to as the IT-related business network, originates from Swedish companies, but extends over national borders through business relationships. The forces occurring within this business network are manifested by mergers, acquisitions and bankruptcies in which at least one Swedish IT-company is directly involved. However, the basic idea of using mergers, acquisitions and bankruptcies as forces being part of the business network change process is that such events also has an affect on actors other than the one or two directly involved in the event. By including relationships between the directly involved companies and some of their counterparts in this data, a far wider picture of the events are obtained. The M&A research has been highly focused on the two consolidating companies, at most acknowledging other companies as a context at an arms-length distance, but this approach thus widens the merger, acquisition and bankruptcy to also include the actors in some way related to the involved companies. Figure 3 below shows how a widened acquisition situation can be described, involving numerous roles besides the directly consolidating actors.

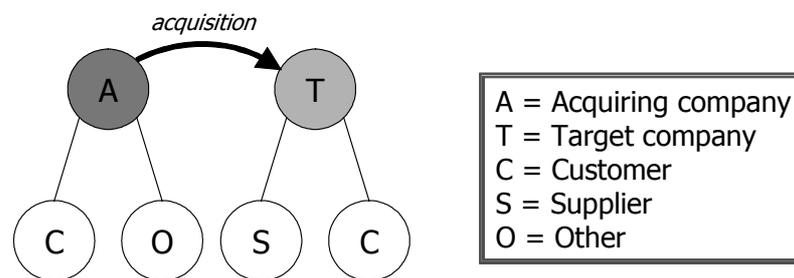


Figure 3 A widened acquisition situation

Data has thus been collected in order to enable the analysis of business network change. This data is quite comprehensive which enables a rather nuanced description of the change. The following sections will give some examples from an ongoing study that uses this data and the described descriptive dimensions of business network change to describe the Swedish IT-related business network during the turbulent years.

### The Intensity of the IT-related business network's change

The intensity can be shown in many ways, and cross-analysed with many different variables, and this section will naturally only be able to show a few of these. To start with, the amount of forces is to be addressed. After filtering out the events where the year was not known, was outside the studied period, or which were insufficient in some other way, 1037 mergers, acquisitions and bankruptcies remain in the data.

The actual numbers should naturally be used with caution. They do not represent the true number of mergers, acquisitions and bankruptcies, as the data source, i.e. the news paper, has a

filtering effect in its selection of what to publish. Although the studied forces were selected as they are radical rather than adaptive, the nuances of the radicality can be looked into by distinguishing the different types of events. Doing so shows that about 78% of the included events are acquisition, whereas bankruptcies and mergers account for around 11 % each (see Table 1). One can consider mergers to be the least radical, due to the reciprocity of the action, and bankruptcy to be the most radical, due to the complete and perhaps sudden termination. As those types of events were about as frequent, the radicality can be judged to be somewhere in the middle of the radical part of the scale.

Event	Number	Share
Mergers	109	10,5%
Acquisitions	806	77,7%
Bankruptcies	122	11,8%

Table 1 The types of events/forces

When looking at the temporal spread, the number of forces, i.e. mergers, acquisitions and bankruptcies, must be distributed over the studied ten years. Figure 4 below shows the distribution of the forces, in the form of events. Although there are some events each year, the distribution is not exactly even. When looking at this graph, showing how many forces that acts per year, one should consider whether the studied business network is relatively constant in size or if it changes a lot during this period. As the number of IT-companies increased substantially during this period (reference omitted for the blind-review), the IT-related business network can be assumed to have grown. The number of forces should thus perhaps be related to some numbers indicating the size of the business network. That is however not included in this paper's exemplifying analysis.

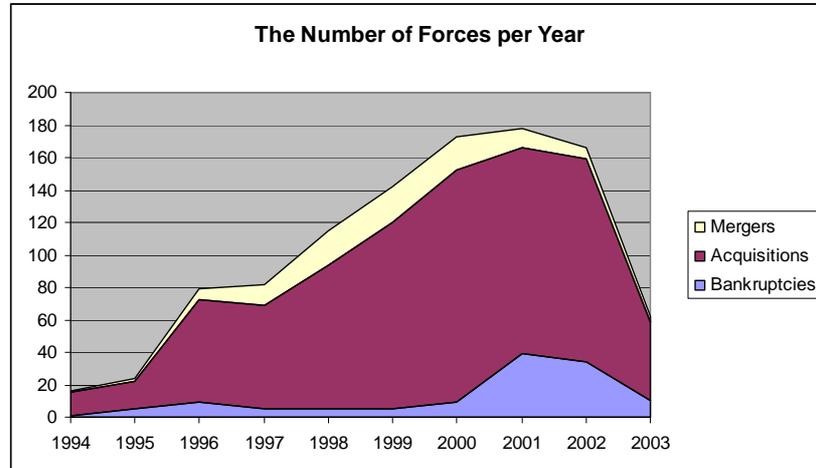


Figure 4 The number of forces per year, shown as the number of mergers, acquisitions and bankruptcies

In average, 104 events occur each year. Relative to this, five of the years are above and five are below the average, which at least indicates that there is some kind of balance. Worth noting is that the years above average forms a continuous period of five years. With an average difference from the average number of events being 51, and the standard deviation being 60, it is quite a difference between the years. The evenness is thus not the best, but nor is it the worst thinkable, so the temporal spread of the change of this business network must be judged as medium. If paying careful attention to the figure above, the bankruptcies shows a far more obvious concentration; only two years are above the average within that type of event.

Summing this up, the amount of change is hard to judge without a reference, but following the general understanding of this period among the IT-companies, it must be judged as a high. As mentioned earlier, the numbers per se are not of utmost importance as the coverage of the used sources is unknown. It is however not the objective of this study to make a complete compilation of the mergers, acquisitions and bankruptcies. The radicality was considered high already through the focus on this kind of events as the forces. But making the three included types of events represent variations of the upper regions of the radicality, the studied business network change was considered medium. Finally, a mediocre temporal spread was appraised, although some variations between the types of events could be noted. Altogether, the intensity of the change of the IT-related business network is considered high.

### The Extension of the IT-related business network’s change

Turning to the other of the two proposed dimensions of change, the extension of the change is to be assessed. The extension is more complex than the intensity, but this section will give some ideas of how it can be approached. Three components of the extension were suggested earlier. The positional extension will, however, not be used here. The position of an actor is a measure relative to the “whole” business network, and as this study does not capture a “whole” business network, the positions of the actors cannot be calculated.

The actor extension is more manageable. By looking at the number of times each actor is directly involved in an event, i.e. being the acquirer, acquired, a merging party or the company going bankrupt, an understanding of the spread of the change among different actors can be obtained. Figure 5 below shows these numbers divided in the three types of events.

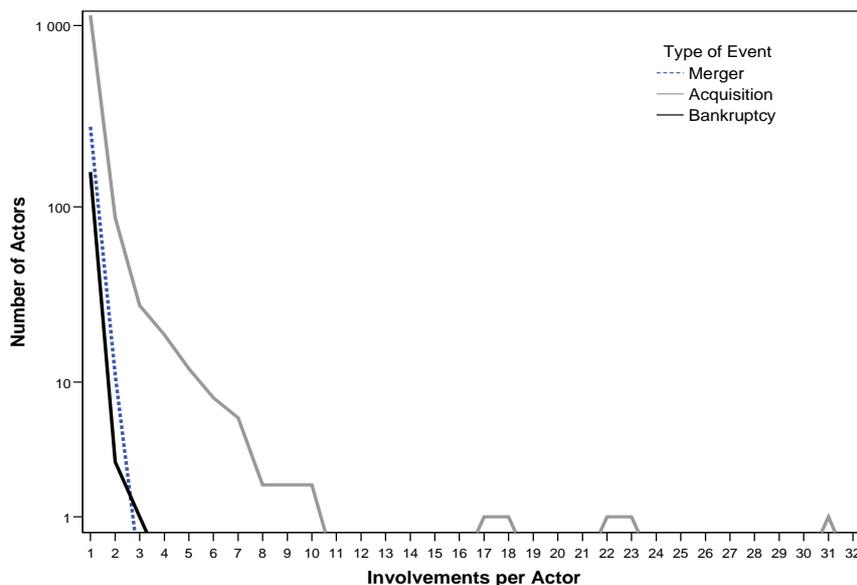


Figure 5 Actor extension as the number of (direct) involvement per actor. Note that the y-axis uses a logarithmic scale.

As the graph shows, 90% of the actors are only involved in one event whereas only 2% have been a directly involved actor in 5 or more events. Looking at the involvements, the single involvement actors account for 70% of these whereas the actors with five or more involvements make up 14%. In average, the actors are involved in 1.3 events (excluding those actors that are not directly involved in any events). This means that the events involve a large number of different actors, although some are notably frequent in their acquiring of other companies.

Concerning the extension of the business network change, this means that the forces are widely spread in the business network, and not concentrated to a minor part of the business network. Although the proportion of involved actors to the total number of actors is unknown, the actor extension must be considered high.

Turning to the technological extension, where the technology and products of the actors are used to address the heterogeneity of the studied business network, the analysis should show whether the forces are concentrated or spread, from a technological perspective. This can be done by looking at the technology of the actors involved in the events, shown in Figure 6 below. In the figure, the distribution between four product types, IT-services, IT-goods, various IT and non-IT, is shown divided into four groups representing the role of the actor in the event.

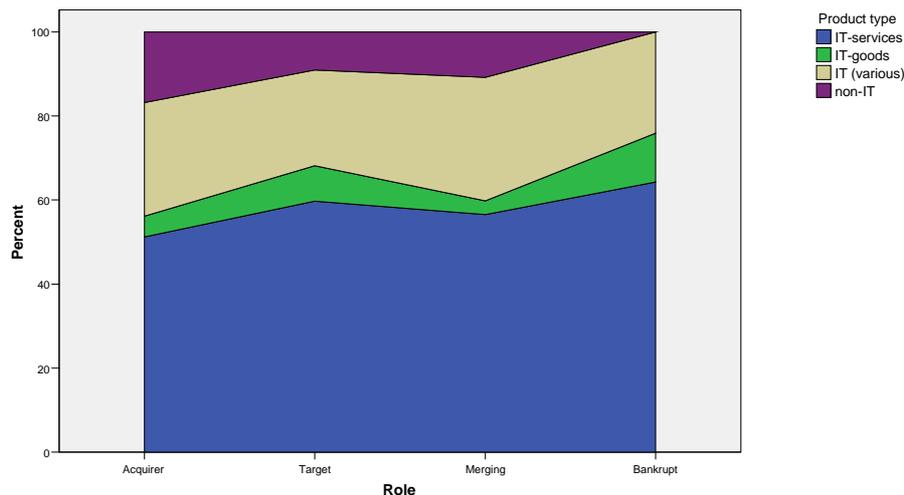


Figure 6 The distribution of the different product types of the directly involved actors. The role of the actor makes up the horizontal distribution.

The figure shows that the most involvements in events are by IT-service companies, which account for between 51% and 64%. IT-goods is notably infrequent in the compilation, with only 3% of the mergers. The bankruptcies are, however, to almost 12% IT-goods companies. Non-IT companies are present with 9-17%, with the highest number representing the acquiring role. As the study and data collection is delimited to events directly involving at least one Swedish IT-company, the non-IT companies are naturally not represented in the bankruptcy category. To add meaning to these numbers, an indication of the number of companies within the different IT-categories should be established to make these numbers more analyzable.

As mentioned earlier, the events are seen as something wider than just affecting the directly involved actors (see for example the widened acquisition situation illustrated in Figure 3). The technological extension, and the analysis of where in the business network the forces have an impact, should therefore involve more than just the directly involved companies. The data contains information about some relationships between the actors directly involved in events and their customers, suppliers, owners etc. The data does not cover all the relationships of these actors, but the most important relationships are often mentioned in the articles describing the events. The technology of the two merging companies have been used in some research to categorize M&As (cf. Federal Trade Commission, 1968; Larsson, 1990). As shown in Figure 7 there are some resemblances to the previous chart. The IT-service companies are most frequent also in this aspect, with 47-49% of the actors indirectly involved in the events. Worth noting is also the non-IT actors, which makes up about 20%, and thus shows that this is not a study limited to the IT-industry.

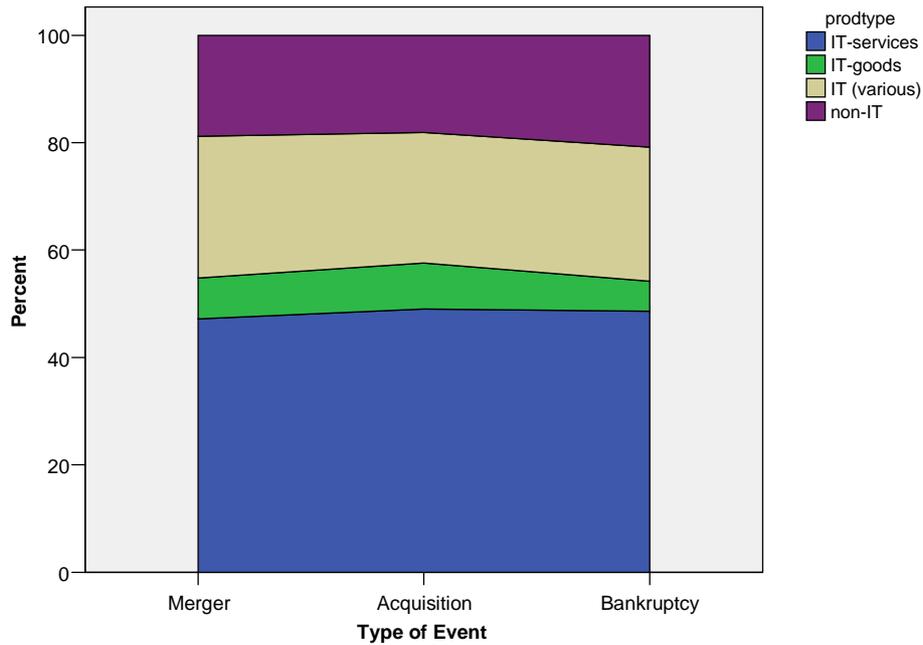


Figure 7 The distribution of the different product types of the actors related to an actor directly involved in an event. The type of event makes up the horizontal distribution.

What should be noted is that also this chart, showing the 3<sup>rd</sup> party actors, indicates a substantial spread of the change. The forces thus involve a mix of actors both directly in the event and in the proximity of it. Although also this analysis gives rise to some interesting further approaches, the interpretation of what has been shown here is that the technological extension is high.

The extension of business network change clearly showed to be more complex than the intensity. So, although this empirical encounter showed potential of the suggested dimensions to describe the extension of the change, further attention must be directed towards making these dimensions usable and, eventually, the extension of business network change can be assessed empirically.

### The Over-all Change of the IT-related Business Network

After these examples of how the intensity and extension of the change of the IT-related business network can be assessed, it is interesting to bring the results of these analyses together and use them to describe the over-all change. The analyses have, so far, described characters of the individual changes, to get an understanding of how common and wide-spread the forces acting on the studied business network are. The unit of analysis has thus been individual forces in the form of mergers, acquisitions and bankruptcies. When turning to the over-all business network change, and returning to the intensity-extension matrix shown in Figure 2, the studied business network is the unit of analysis. Describing the change of the IT-related business network thus require the over-all intensity and extension to be assessed, after which the studied business network can be placed in the change matrix.

Putting together the indicators of intensity, the amount of forces was considered high and so was the radicality. The temporal spread was, as the amount of forces per year, considered moderate. Altogether, the intensity can be concluded as high, although perhaps not reaching the highest thinkable levels. The indicators on the extension of the change were, however, more unanimous. The forces involve a large number of actors, which could be seen as a low concentration in the

forces to certain actors, and the actors involved, both directly and indirectly, represent a spread in the business network. Consequently, the extension is concluded to be high.

By using these appreciated values of the intensity and extension, the change of the IT-related business network can be positioned in the intensity-extension matrix. This is shown in Figure 8 below. Although the exact position should be interpreted with caution, the studied business network, based on Swedish IT-related actors during 1994-2003, is clearly in the upper right quadrant of the matrix. This quadrant contains business network change that is not only of high intensity, but also has a high extension. Looking back at the empirical situation of this study, a suitable label for the change represented by this quadrant could be ‘turbulence in business networks’.

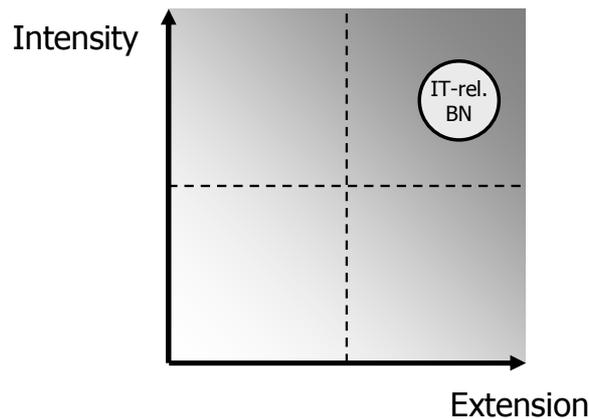


Figure 8 The suggested character of the change of the IT-related business network.

## Concluding Discussion

This paper has furthered the knowledge on business network change by suggesting a force-based approach, and by presenting a number of dimensions through which change can be described. From a managerial point of view, this approach to change, as forces influencing the business network change process, sets the business firm and its actions in a context of other firms and their actions. Not only is this relevant for recognizing the wider effects of the firm's own actions, but it also acknowledges the individual firm's dependence of the business network change process, controlled by the aggregated actions of the actors in the business network. The dramatic ‘turbulence’ among the Swedish IT-companies is in this paper transformed to a business network change that can be described through the proposed dimensions of change; intensity and extension.

The use of forces to describe business network change, as was proposed by Håkansson and Henders (1995), has been continued and extended through the more detailed descriptive dimensions. Though this approach, business networks have been seen as wider structures rather than as sets of business relationships. When discussing business networks, a clear focus on the structural phenomenon as a whole is beneficial, and this paper has shown the feasibility of the entity view of business networks.

The paper also contains exemplifying results from an empirical study, analysing the intensity and extension of business network change, based on the force-based approach, in the Swedish IT-related sector during 1994-2003. Not only does this offer a description of mergers, acquisitions and bankruptcies as a somewhat coherent phenomenon (cf. Mattsson, 2000; Weston, 1952; Öberg & Holtström, 2006), but this study also gives an interesting, and rather different, description of business network change. The result describes the change of the studied IT-related

business network as being highly intense and widely extended. It also suggests that business network change is quite complex and heterogeneous, and more attention should be directed towards understanding the change, mechanisms and nature of business networks. For example, the analysis performed in this paper could be enriched by including variables which adds relativity to the relative numbers.

A sharper definition of the descriptive dimensions and a more thorough application of them is naturally wanted, and will follow. This paper primarily sought to introduce the force based approach, including the descriptive dimensions, and illustrate the use of it. Therefore, not all dimensions were used in the empirical example shown in the later part of the paper. Future studies do, however, have excellent possibilities to make use of different aspects and situations in order to learn more about how business network change, and the suggestions in this paper will be useful to that quest.

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