Networking among small and medium-sized enterprises to promote health and safety – what are the lessons to learn?

Sisse Grøn (sig@teamarbejdsliv.dk) and Hans Jørgen Limborg (hjl@teamarbejdsliv.dk)
TeamArbejdsliv

Abstract

The Nordic countries have a large number of small and medium sized enterprises (SMEs), thus it is a problem when many SMEs find it difficult to address their health and safety challenges. It is also a problem that the regulative bodies find SMEs difficult to address in a way that match their circumstances. Researchers and regulatory bodies lack an in-depth understanding of how small and medium sized enterprises (SMEs) make decisions about workplace health and safety improvements and the role played by business networks in these decisions.

To improve regulation and support there is a need to create the means to empower them to work systematically with occupational health and safety, and it is our assumption that networks of SMEs enables the companies to work with health and safety issues in a better way than when they are on their own.

In an ongoing research project we thus study and compare three cases in which groups of small enterprises have formed networks to solve a health and safety oriented challenge: A group of diaries, brewers and demolishers. Using realistic evaluation theory, we have analysed material describing the process of addressing a health and safety issue in each case. The information was obtained through qualitative interviews, document analysis and observations and our analysis focuses on the internal and external mechanisms that are driving the processes. We conclude that both external pressures and internal motivations must be present to motivate SMEs within a network to improve health and safety conditions.

Introduction

Small and medium enterprises (SMEs) account for 99% of Danish companies, employ more than 30% of workers, and are considered a major source of growth (Hasle & Limborg, 2006:10). However, it is mainly experience from studies of large companies that form the basis for regulation of safety and health in large companies as well as in SMEs.

Current research shows that SMEs have a reasonable knowledge of legislation and health and safety regulations, but experience great difficulties in meeting the requirements of work environment interventions (Hasle et al, 2004 : 44; Forteyn et al., 1997; Aldrich et al., 1999). SMEs generally have a lower degree of formalized and systematic planning than larger companies and approach
working environment questions in an ad-hoc and informal manner. Improvements in working conditions and preventive measures are often linked to external influences. However visits from the labour inspection are rare, and do not seem to motivate to invest in OHS – improvements (Hasle, 2000; Walters, 2001; Axelsson, 2002). It is proposed that what matters more to them, is the threat of falling behind the competitors, or being imposed costs that are not a general demand among the businesses in the trade. (Hasle, 2000; Walters, 2001).

To improve regulation and support there is a need to create the means to empower them to work systematically with occupational health and safety, and it is our assumption that networks of SMEs enables the companies to work with health and safety issues in a better way than when they are on their own.

In an ongoing research project we thus study and compare three cases in which groups of small Danish enterprises have formed networks to solve a health and safety oriented challenge: A group of dairies, brewers and demolishers.

The aim of this paper is to pinpoint the mechanisms which had a positive effect across the three projects. We distinguish between project outcomes; the outcomes which the project owners desired and societal outcomes; the way these projects have changed the realities in their sectors and thus had a much larger, but also unmeasurable, outcome.

**Methodology**

We need an approach which will allow us to account for causal relations, but in a way that fits the reality of social research, thus we have chosen critical realism (Maxwell, Bygstad & Munkvold) as our analytical framework. Maxwell’s contribution to critical realism addresses qualitative research, and as the results in this paper derives from qualitative data, Maxwell’s version of critical realism is well suited. Critical realism takes a middle position between positivism and interpretive research. Maxwell explains the position by stating that critical realism combines a realist ontology with a constructivist epistemology and he quotes anthropologist Fredrik Barth to exemplify; ‘Like most of us, I assume that there is a real world out there – but that our representations of that world are constructions.’ (Maxwell p. 6).

Bygstad and Munkvold, have, although they write within the field of Information Technology, published a very inspirational paper (Bygstad & Munkvold), which aims to provide a framework for identifying causal structures in critical realist studies, they term these structures; mechanisms. A mechanism is, with philosopher Roy Bhaskar’s definition (Bygstad & Munkvold p.1), simply defined as a causal structure that explains a phenomenon. According to the authors a critical realist research design would be a study with a limited number of cases where the researchers analyse the interplay between the actual events, the detected mechanisms that produced these events and the underlying structures. This corresponds well with our double aim; to account for the mechanisms which produced the outcomes in the three cases, but also to account for the transformation of the underlying structures which is a result of the human agency performed in the networks as they were
producing their local results. Bygstad and Munkvold propose a stepwise framework for the data analysis with the following six steps: Description of events; Identification of key components; Theoretical re-description; Retroduction: Identification of candidate mechanisms; Analysis of selected mechanisms and outcomes; Validation of explanatory power.

The following sections of this paper we have structured according to Bygstad and Munkvolds recommendations. But before we take on the challenge of following the steps, we need to account for our data. We obtained information about each of the projects through qualitative interviews, document analysis and observations. Document analysis included review of existing written materials; project applications, project descriptions, project evaluations and minutes from meetings. The questions in the interview guides aimed at helping the interviewees recall the process and the key components in the process.

For case 1 we conducted semi structured interviews with representatives from 11 companies; four were group interviews, three were telephone interviews. We also conducted two expert interviews (Flick) with a key person and the data was supplemented with observations of two meetings and three visits to worksites. For case 2 we conducted three semi structured expert interviews with a key person and seven interviews with business owners, five were telephone interviews. We also visited two worksites and talked informally with the employees. For case 3 we conducted one semi structured interview with a group of experts and nine interviews with business owners or managers, five were telephone interviews. The result is a vast amount of data, for the analysis in this paper we have chosen to focus on the data which reflect group dynamics because we believe that they are central for understanding networks.

**Description of events**

Case 1: A group of dairies
21 small dairies were already in a network established by the trade organisation. The group jointly applied for funding for a project to prevent musculoskeletal disorders. The group was aided by a private consultancy firm and the aim was to develop technical lifting aids that would fit the circumstances of the small companies.
That set-up was that three dairies would be cases and the others controls, the control dairies did not develop an aid, but would be informed about the results, so that they might later copy the idea. The production of the aids was complicated due to the nature of the working processes and the small size of the businesses, so they needed to be designed in close collaboration with the employees.

Case 2: A group of breweries
25 small breweries, all of which belonged to the Brewers' Association Small and Medium Breweries Group, were inspired by the dairies project. Work in a small brewery generally involves manual tasks with heavy and repetitive lifting and awkward postures, which lead to musculoskeletal disorders (MSD). Most small breweries are not automated and cannot afford or do not have the expertise to implement the technical solutions, that exists in the large breweries. Thus the project
proposed to develop ergonomic improvements to reduce MSDs, including a vacuum cleaner to transport malts, low cost lifting equipment for bottles and tools for handling of kegs. Three breweries agreed to develop and implement these improvements as case breweries. A consultant from the Brewer’s Association was very active in setting up the project and developed the application for funding. One of the owners of a small brewery took the lead in the process of motivating the other brewers.

Case 3: A group of demolishers
Demolishers are a large and heterogeneous group; some are mere farmers with a tractor, while in the top end the businesses are specialized in removing dangerous material. This diversity means that competition is hard and focused on prices, seldom on the quality of the task. The sector has seen a professionalization tendency during the last decade, but the standard still need to be raised according to our interviewees – who were all from the top end. The group consists of 25 enterprises organized in a trade association. The group has three focus areas to raise the quality standard in the sector; one is a certification system, another to have stricter regulations and the last is vocational training especially for demolishers. The last effort is the one we have chosen as our case.

Identification of key components
Case 1:
The dairy sector is old and has well established corporative structures and meeting forums. Likewise the production- and market conditions are stable and formalized, even if resources are limited. The enterprises in the group are competitors, yet have a common interest because of the presence of one large dominant enterprise. Also, the network agents are members of an association of small businesses within the sector. Their mutual interest in the project was to ensure that their production methods would match occupational health and safety standards to avoid negative attention and accordingly to improve the public image of the sector. Several businesses had namely received notes from the Labour Inspection due to shortcomings concerning ergonomics. The trade union and the collaborating consultant were deeply involved in the design of the projects. It was only because a consultant informed them about the funding possibility and wrote the application that the project came about.

The decision-making process was triggered by a pioneer figure amongst them who repeatedly gave voice to their shared interests and challenges. The first thing he highlighted was ‘the negative awareness of the Labour Inspections’ and a shared problem with ergonomic issues. The second, a shared enemy in ‘the dominating company in the branch’ who so far had gained all support from the union and the prevention fund, and thirdly he reminded his peers about the mutual gains obtained though the sharing of experiences through the history of the small dairies.

The group made an ‘openness and commitment pact’. One of the dairy managers describes the process, this way: ‘When we decided to make a pact on ‘open doors’ (the possibility of studying each other’s production processes and workflows) the room was completely silent. So we asked if anyone was against the
Deafening silence - Eventually we had to ask everyone to stand up and say, whether they were ‘in’ or not, and then some had to think it over’. In a shared understanding of the ‘common good’, consensus seeking and recognition of asymmetry among the dairies, the case dairies and the controls were selected. The consultant had an active role and pushed the dairies to hold meetings, ensure employee representatives and facilitated the contact to suppliers.

At a final stage of the dairy project process the experiences from implementing the technological improvements was disseminated to the control dairies and other network members, through a series of “open house arrangement”, which were well visited.

Case 2:
The brewery sector has changed profoundly and most of the small breweries are new in business and thus entrepreneurial. The tradition of cooperation is based upon their entrepreneur spirit and their high enthusiasm for the product. Also, the enthusiasm builds upon a professional interest in brewing and not necessarily an interest in running a profitable business. The brewery directors themselves typically take part in the production. Resources are limited and the breweries are still burdened by investments in new production capacity and a decreasing market. As in case 1 the groups of small enterprises were competitors, but also had common interests because of the presence of one large dominant enterprise. Also, the network agents were members of an association of small businesses and their mutual interest was to ensure that their production methods would match occupational health and safety standards to avoid negative attention and accordingly to improve the public image of the sector.

As in case 1 it was only because a consultant informed them about the funding possibility and wrote the application that the project came about.

None of the interviewed breweries had had any ‘negative’ experience with the Labour Inspection, and accordingly, the breweries had no ‘fear’ that visits from the Labour Inspections and fines were a serious external threat to the businesses. Though some of them revealed that they were sure this would probably be the case in the future, it was a general experience that the Labour Inspectors primarily were giving advises of how to solve the problems rather than enforcing costly solutions upon them. Whether this was due to the Labour Inspections policy towards newly established companies, indulgence towards breweries, or a coincidence we do not know, however, the threat of control was not as obvious to the breweries at the time of the interviews as it was to the dairies.

Most brewery owners felt the workload on their own bodies and were thus positive towards improvements of the working environment. However, driven by enthusiasm to the business, the issue of occupational hazards had not yet entered the top of the agenda at the brewery. The selection of case enterprises was an ad-hoc process influenced by ‘single’ businesses, ‘pioneers’ who wished to be test breweries themselves and thus benefit from the new developed technology. In consequence, the idea of the ‘common good’ of the network was never realised and the idea of a formalised partnership was never formulated.

The consultants were replaced and the companies were dissatisfied with the new consultants’ competencies. The effect was that the consultants did not have the same influence as in the dairy
case and also the knowledge sharing process was less formal, and as a consequence the gained experiences was not disseminated to the control companies as was the case in the dairy project.

Case 3:
On the annual meeting of the demolisher section, which is part of the construction association, a pioneer from one of the leading companies stood up and suggested that they made training for demolishers. He had made the suggestion twice before, but this time two of the other younger company owners supported his idea. He explained that ‘I was tired of listening to them complaining like a bunch of cry-babies, so I suggested that we made training courses to raise the image of the sector’. It is a powerful narrative and the other participants described the scene accordingly, but it was also revealed that he had raised the issue twice before, but this particular year, two other owners of leading companies had had a talk in the break and agreed to support the idea if he raised it again.

The establishment of the section is an earlier example of a similar effort and we need to dwell a bit on its history to understand the power game in the section. The pioneer at that time was a person with excellent social skills, many of our interviewees mentioned how the parties are always good and everyone feel included in the group and he started that. We also interviewed the grand old man and he several times pointed to the importance of including everyone ‘You know what they say about the weakest link, if we want to improve our image in the eyes of the public, we can’t have someone fooling around…’ It is however important to remember that ‘everyone’ means everyone in the top, because everyone means those who will comply to the standards the group sets. The whole point of the section and the training is to raise the standard in the sector, so that means exclude the bottom end too.

A working group was formed to realise the training idea. The association provided a consultant to assist the group and the trade union was also involved. They chose to make a training consisting of a series of already existing courses and added some demolisher-specific elements. The training lasts 1½ years, and varies between theory and practice; two weeks in school is followed by six weeks of on-the-job training and then a new part of the course starts in the same way.

It was a challenge to find a teacher who knew enough about the tasks to teach and who also had the right approach considering the target group. The training is not mandatory, the companies who took part in developing the course regularly sends employees to the course and so does a few of the others, but there were also several of the company owners or managers whom we interviewed who did not. Their reason was that they were too busy to have someone in school even for a few days or that their employees were already so experienced that it would be an insult to them.

After this brief account of the processes and components in our three cases, the next step is to extract the key components. We have focused on the components which came up in more than one case and are related to group dynamics.

• A need to distinguish
In case 1 and 2 the groups had a common interest to distinguish themselves from a large and dominant competitor, while in case 3 their effort was to distinguish themselves from the bottom end of the companies in the sector.

• A pioneer figure
In all three cases a pioneer figure was mentioned as the one who made things happen, the stories in case 1 and 3 were strikingly alike in the narrative about how the pioneer got up and raised his voice to outline their common challenge. Whereas the pioneer figure in case 2 made it happen, but lacked the uniting capability that especially the pioneer in case 1 had. It seems that a pioneer figure is an important trigger, in all cases it was a person from a leading company, which had a strong interest him/herself in the project and in case 1 and 3 also someone who had a vision on the behalf of the sector. But furthermore we learn from case 3 that the pioneer figure must be given the mandate to speak for the common good.

- Improve image/threat

In all cases there was a formulated wish to improve the public image of the sector, but the most prevalent threat was felt by the dairies in case one, because of the pressure from the Labour Inspection.

- A consultant

In all three cases the group had help and support from outside, the trade organisation provided a setting for the groups, they received substantial financial support, from a fund in the first two cases and via the vocational training system in the third and also a consultant helped with the practical process, again there was a difference between the two intervention projects and the consultant had the most impact in the first case.

**Theoretical re-description**

According to the hermeneutic inspired network theory (March & Olsen, 1995, Powell & Dimaggio, 1983), networks are likely to be subject to 'top-down' processes that influence the institutional design of the network. A well described top-down process is isomorphic pressure, which makes networks or companies more similar out of an expectation that they will increase their legitimacy or economic efficiency by doing like the others. It is crucial for the cohesiveness of the network, that it develops a collective notion of a 'we'. Often, this notion is interconnected with a collective perception of various external pressures or events that ‘threaten’ the stability of the actors in the network and encourage the network actors to act collectively in order to restore conditions for community development, because: ‘everybody is in the same boat’. Accordingly, the community development, i.e. the sharing of competences, knowledge and resources through regular contact, is built on a desire to strengthen the community (March & Olsen, 1995).

Network theory suggests that a driving force in a network is the perception that shared resources are necessary in order to realize the actors’ shared goals and that joined the actors will achieve more influence and impact. The dynamics of the network is, therefore, characterized by interest matches, and the establishment of the network requires pre-negotiation that can aggregate the interests (Rhodes, 1997, Torfing and Soerensen, 2005). The collaboration of the network members depends on the possibility of formulating shared goals (instead of interest differences) and assignments that can act as an umbrella for the participation of various interests and objectives. Crucial to the network cohesion is also that the interdependency is big enough to solve the conflict interest through negotiation and through the development of formal and informal rules. Further, it is essential to create trust relations between the network actors, enabling them to interact and enter
into binding corporation (especially when the exchange of resources is over time) (Rhodes, 2000; Torfing and Soerensen, 2005). Finally the theory highlights the inclusion and exclusion mechanisms of networks. The theory holds that cohesion of a network is threatened if resources are asymmetric among the network actors. A fact, that creates ‘strong’ and ‘weak’ participants (March & Olsen, 1995; Torfing and Soerensen, 2005).

Identification of candidate mechanisms

Some mechanisms derive from outside the groups, and can be seen as part of the reason why the projects came about. This is true for the mechanisms of external threats and need for distinction. The financial and organisational support mechanism is on the boundaries between outside and inside, it comes from the outside but has an internal side too, as the consultants are part of the process. The inclusion/exclusion mechanism is powerful, but it is not visible as a direct cause, rather it is an underlying cause for other mechanisms. More direct and visible are the mechanisms of a pioneer figure and also the recognition of asymmetry or lack thereof. We have outlined the mechanisms and their status in the figure below.

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Dairies (1)</th>
<th>Breweries (2)</th>
<th>Demolishers (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>External</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External pressure from Labour Inspection</td>
<td>Active</td>
<td>Limited</td>
<td>Active</td>
</tr>
<tr>
<td>Need for distinction</td>
<td>Active</td>
<td>Active</td>
<td>Active</td>
</tr>
<tr>
<td>External funding</td>
<td>Active</td>
<td>Active</td>
<td>Active</td>
</tr>
<tr>
<td>Professional support (consultant)</td>
<td>Active</td>
<td>Partly</td>
<td>Active</td>
</tr>
<tr>
<td>Internal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pioneer figure</td>
<td>Active</td>
<td>Partly</td>
<td>Partly</td>
</tr>
<tr>
<td>Recognition of asymmetry</td>
<td>Agreed</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

The dairy case has become our best practice case, as it has all the mechanisms we have listed. After an account of the outcomes in the cases we shall conclude what has been achieved in the first case, but not in the second and third to the same extend.
Analysis of mechanisms and outcomes

It seems that the inclusion and exclusion mechanism is powerful in our cases. In the first case they succeed in formulating common interests, there was an acceptance of asymmetry in the group and the process is open. Of the two intervention projects, it is also the case with the best results in terms of achieving the outcome they settled for. The goal of the project was to develop technical lifting assists for three of the most hazardous operations and thus reduce strain by 50% and total measured lifting weight by 60%, and a physiological test should also prove a reduction of work in extreme positions (Christiansen 2013). All three working groups developed a fully functional lifting assist, and a provider of technical lifting equipment was involved in order to develop a tool that could be marketed from the prototype. An ergonomic consultant performed the evaluation and concluded that: “All three developed lifting assists reduces the number of lifting and handling operations considerably, and the goals are accomplished when the lifting assists are in use” (Mathiasen & Jacobsen, 2011). However towards the last stages of the dairy project, the network dynamics lost power. The case companies experienced resistance towards the new aids among some employees, they were found to be too complicated to utilise, and neither the associated diaries nor other dairies have (to our knowledge) implemented the new technology fully.

But it is also the case with the most obvious pressure from the Labour Inspection so the companies in the bottom end may have felt more inclined to accept asymmetry, than in the other cases.

Because a large number of new small breweries have opened in the last 15 years, rates of work related injuries and illnesses are not available. The three case breweries developed technical assists to reduce manual lifting of bottles to and from the conveyor before and after bottling. This equipment was successfully implemented in the breweries where it was developed, but none of the others copied them. The main reason for not doing so was the cost, even though many of them expressed great interest to do so, if it had been funded as was the case at the case breweries. As the technical solutions mechanised the lifting of bottles at the bottling operations, it was in the evaluation considered by the OHS consultant to be a successful response to the goals.

As for the demolishers the aim was to establish the training and to keep it running, which they succeeded in. Except from one year, the courses has been completed with two classes per year, though it is not yet mandatory and not all companies make use of the possibility. The companies report that they see a big difference in the trained employees and the whole company benefit from their knowledge, but none of our interviewees had measured sick leave or work accidents in relation to the trained employees.

Apart from the local and expected outcomes, there are also some unmeasurable, but important societal results. The group from our first case jointly received a price for their project, which was an inspiration to other groups, such as the group in our second case. The interviewees from the dairies also reported that the they now have stronger bonds to the other companies and increased trust in their competitors which is something the whole sector can benefit from. The term co-opetition (Levy et al 2003), implies that competitors, and especially SMEs due to their limited range, benefit
from cooperating on certain parts of their business, such as innovation. Another arena might be occupational health and safety as we learn from case 1.

In the second case it was mainly the few case companies who benefited from the project, there was however some dissemination of the results afterwards. In the third case the sectors has seen a promising change in the way knowledge is shared and spread, since we learned that before the training they had a network on management level in the trade association, but now the employees have networks amongst them as well and they learn from the courses and from each other instead of being limited to the knowledge within their company. This may raise the standard in the sector considerably. But it still seems to be limited to the companies who took part in developing the course and a few others. Thus only in our first case did the network succeed in including everyone, even if it was an inclusion on diverging terms.

Conclusion

In case 1 where all the listed mechanisms were active, the network was strengthened and the sector lifted in terms of occupational health and safety. Whereas the effect was more limited in case 2 and 3, thus it is important that the external mechanisms such as support, external pressure and a common interest are present, but internal mechanisms such as a pioneer and the groups´ ability to integrate all are necessary too. Looking at support to networks as a policy tool directed at small businesses, there seems to be positive prospects. Even in the two less successful cases there were still positive results and compared to other policy instruments directed at SMEs, such as information campaigns which are not often successful for the SME target group, or Labor Inspection visits, that might be effective as a threat, but does not provide solutions and also does not reach everyone either, they seemed to reach more employees and provide a way to help the companies to raise their health and safety level on their own terms.

Acknowledgements

Apart from the authors two other persons have taken part in creating the data; Freja Jensen telephone interviewed demolishers and Maya Flensborg Jensen collected data for case 1 and took part in the analysis as well. We are grateful for their contributions. Henry Larsen, Peter Hasle and Klaus T. Nielsen gave valuable input to the analysis, for which we are grateful too.

Literature:


