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The enterprises active in the industrial subcontracting branch are in a very competitive market and support large pressures on their prices and delivery schedules. The arrival on the market of suppliers from low-cost countries like Eastern Europe or the Far East increases the pressure and drives towards delocalization. One possible answer to these demanding challenges is to cooperate within collaborative networks. Even if this concept is now rather well known, few SME are actually involved in such alliances and their success rate after a couple of years seems low. This paper presents a study of the success and failure factors resulting from the analysis of two collaborative networks of SME in the Swiss subcontracting industry.

1. INTRODUCTION

Available estimates indicate that SME are the main generators of employment in Europe, representing 66% of all jobs. It is also estimated that industrial subcontractors represent roughly 20% of all industrial jobs (Liikanen, 2000). In 2000 and for fifteen EU member states only, 7 million jobs existed in the 277'000 subcontracting enterprises and the turnover of this industrial branch reached 350 billions Euros (Coué, 2000). These figures show the importance of the subcontracting industry for the European economy and employment level.

The enterprises active in this industrial branch are in a very competitive market and support large pressures on their prices and delivery schedules. The arrival on the market of suppliers from low-cost countries like Eastern Europe or the Far East increases the pressure and drives towards delocalization. The subcontractors in the developed countries must adapt themselves to this new environment if they want survive and have to:

- reduce their production costs
- shorten their delivery schedules and increase their flexibility
- provide complete solutions
- add new services like engineering of parts, logistics, etc.

One possible answer to these demanding challenges is to cooperate within collaborative networks. Even if this concept is now rather well known, few SME are actually involved in such alliances and their success rate after a couple of years seems low. This paper presents a study of the success and failure factors resulting

from the analysis of two collaborative networks of SME in the Swiss subcontracting industry.

2. FIRST CASE STUDY : SWISS MICROTECH

Swiss Microtech (SMT) is a network of 8 independent SME active in the screw machining industry. They produce parts for the automotive, medical, space and telecommunication branches and export 90% of their production.

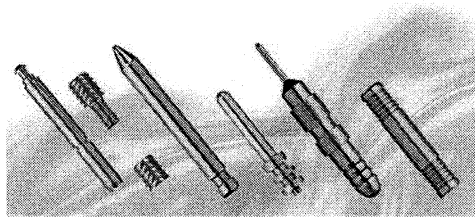


Figure 1 – Some screw-machined parts

2.1 Reasons for creation

A study conducted in the late 90's (Bigoni et. al, 1998) showed that these companies are too small to do business with large customers of the automotive, electronics and medical branches which drastically reduced the number of their suppliers to those able to provide a complete solution including engineering, machining, thermal treatments and sometimes assembly. Most SME of this branch are technically up-to-date, but their commercial services are lacking and their delivery schedules are too long and not reliable enough. As Switzerland is a high-cost country (like all industrialized nations), more and more orders are lost to competitors from the Far East or Eastern Europe. Following the recommendations of this study, a group of 10 enterprises belonging to the same professional association decided to join an applied research project aiming to define a competitor based strategic industrial network in order to improve their position on the market and to address their weaknesses. Swiss Microtech was created by the four founding members at the end of June 2001 as the result of this project (Pouly et al., 2002) and now counts eight members. The four new ones are SME bringing complementary activities like thermal treatments or plastic parts.

2.2 Members typology

The members of SMT have the following typology : four screw machining enterprises that are competitors in some market segments but also have a certain degree of complementarity, one specialist of thermal and metallic treatments, one specialist of square parts, one general machining SME and one specialist of plastic

technical parts. They have between 15 and max. 80 employees and are all ISO 9000 certified.

2.3 Organization of the SMT network

The legal framework of Swiss Microtech is an association with lucrative goals and the chosen structure is based on *roles* (Katzky et. al, 1996, Schuh et. al, 1998). A role is a function that must be fulfilled by one or more persons. Four main roles have been defined (see figure 2) :

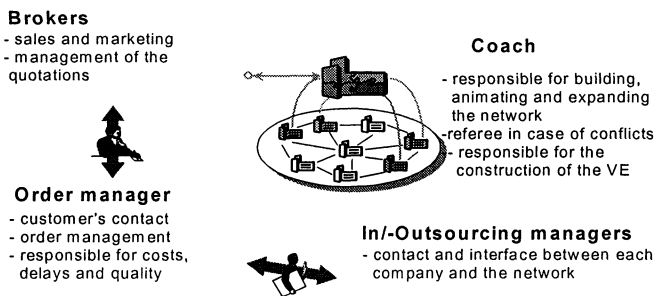


Figure 2 – Roles within the network

Like any association, a committee formed by a President and a Vice-President elected by the general assembly, which is the highest steering authority, governs Swiss Microtech. The President is assisted by the coach, an externally recognised expert of this particular branch of industry who looks after for the “housekeeping” activities as well as the network strategy (selection of new members for instance). A face-to-face network meeting is held each month.

In addition to the roles, *work groups* have been created to address particular problems in a smaller circle and propose solutions for the whole network. They are also very useful for integrating and implicating the network members and to have common activities at this level. The following work groups have been created so far:

- “*Common purchases*” was the first established group responsible for negotiating better prices with the suppliers of raw materials, commodities, consumable goods, machines and equipments etc. The network member having the biggest volume with a supplier negotiates new conditions for the whole network and recommends (or not) adding this supplier to the SMT preferential suppliers list.
- “*Marketing*” addresses the visibility of the network by preparing common SMT booths for the most important technical fairs and studying new ways of doing business like e-commerce. This group is also engaged with its academic partners in a new research project that will explore the possibility of creating and operating an international collaborative network with a network of Chinese screw machining companies.

- “Energy” is mainly dedicated to the purchase of electricity as the protectionist barriers are actually falling in Switzerland and the market is becoming a real jungle where the amount of consumed megawatts dictates the conditions. The “Energy” group will also offer services to reduce the consumption in collaboration with a specialized engineering and brokerage company.

2.4 Results and benefits

The principal results and benefits for the participating companies can be summarized as follows:

- A reduction of the production costs (~10%) has been reached through the common purchases and a better occupation of the production tool: some repetitive orders lost because of too high prices have been recovered
- A reduction of the investments has been reached by the “outsourcing” of some production processes within the network and the sharing of non critical production machines
- Better delivery schedules have been reached with the aggregated production means and this has allowed winning new orders
- A reduction of the dependence from large customers has also been reached by sharing orders within the network and freeing capacity for the other clients
- Few new products have been developed by two or more network members, this must be improved in the future
- Common booths at commercial fairs presenting the partners as members of a collaborative network were always a success. Their visibility compared with their competitors was considerably increased and the visiting clients confirmed their interest in an alliance
- The exchange of technical and commercial knowledge and experience within the network was and is still very active and each network member learns a lot from the others. In a sense, a collaborative network can be seen as a true learning organization.
- A certain sentiment of security has been developed within the network as each member thinks now that he could rely on the others in case of severe difficulties like an accident or an illness of the owner and general manager

3. SECOND CASE STUDY : USCO

USCO is a network of 11 independent complementary SME active as suppliers to the machine industry. They produce parts and services mainly to local machine manufacturers.

3.1 Reasons for creation

In 1995, a major local machine manufacturer announced its new purchasing strategy to its suppliers: they would have to reduce their prices by at least 10% and deliver

complete subassemblies instead of parts otherwise they would be dropped from the list of agreed suppliers. This was an impossible challenge for most of these local SME if they remained alone and they could not afford to lose their biggest client. They also realized the danger of being too dependent on one large customer and also looked for diversification. Two SME took the initiative to talk with other companies to form a network able to address this new situation. The result of this initiative was the creation of USCO in 1995 with 10 complementary companies. The network now counts 11 members.

3.2 Members typology

The members of USCO have the following typology : one specialist of laser and water jet cutting, one specialist of sheet metal working, three general machining SME, one specialist of plastic technical parts, one specialist of plate handling, one plastic injection specialist, a mechanical, an electronics and a software engineering company. They have between 2 and max. 30 employees and are all ISO 9000 certified.

3.3 Organization of the USCO network

The legal framework of USCO is an independent limited liability company; each network member has one share and is member of the Board. One of the network members acts as CEO of this company, which has actually no employees. At the beginning, meetings with all members have been regularly organized but a Direction Board of four members has been created, as the participation of the members was deceptive.

3.4 Results and benefits

The principal results and benefits for the participating companies can be summarized as follows:

- The network was able to deliver the requested subassemblies and machine parts and the members could retain their most important customer
- New customers were found as USCO could deliver complete machines integrated into their final products
- A new measuring machine developed by an Engineering School has been industrialized and produced within the network
- A reduction of the dependence from a few large customers has also been reached by the development of new activities
- A certain sentiment of security has been developed within the network as each member now thinks that he could rely on the others in case of severe difficulties like an accident or a an illness of the owner and general manager.

4. SUCCESS AND FAILURE FACTORS

Participating in a collaborative network means investing time and money, both resources that are scarce for an SME. The motivation to continue to actively participate clearly depends on the balance reached between efforts and benefits. The analysis of these two networks shows that success and failure factors may be common or dependent on the type of network.

4.1 Common success and failure factors

- the network must be customer oriented and must bring more advantages to the customer than any individual company alone
- the network members must be carefully selected during the construction phase to create added value for all of them. If a small core of companies are always participating in new business, frustration will increase for others, they will stop investing time and money into the network and finally leave it
- the size of the network plays an important role: smaller networks may be more lively as all partners know each other and decisions can be taken together, larger networks have more impact and resources and can be more attractive for very big customers
- even if the creation of such an alliance is a bottom up process initiated by the industrial partners themselves, the presence of an independent coach like a research institute during the creation phase will speed up its birth
- the partners of such an alliance should have a similar size. Partners that are too small do not have the resources to really participate or invest and a gap between the “rich” and the “poor” will arise. They should also have a similar level of quality (for instance ISO certification) and IT integration
- the partners must consider the network as a company strategic goal; the commitment of the top management is essential
- the partners must share a common view of doing business with partners, customers and employees and be ready to give before receiving during a certain time as new business will not profit all companies immediately. A compensation scheme (a certain amount being levied on each new business to cover the network housekeeping costs) could be introduced
- transparency is a key success factor, opportunistic and selfish behaviour will kill the collaboration very quickly. As the virtual enterprises created for new orders or projects must group the companies that best fit the requirements, the network must work in a very transparent way. The consequence for the partners is that they will have to share their cost structures and load situation already during the quotation phase and this is really not obvious as many companies consider such figures as state secrets!
- as in any association, there is a need for “motors”, i.e. charismatic partners who motivate and also keep the network alive and agree to take some responsibilities to act as President or member of the Board even if they are not rewarded for these extra tasks

- an acceptable balance between the time invested in the collaboration and the time needed by each partner for its own enterprise must be reached
- successes are very important to keep motivation high. Cost reductions are helpful at the beginning of a collaboration but value-added transactions and new business opportunities are necessary for the long term

4.2 Success and failure factors depending of the type of networks

Common activities for all members are easier to find for *networks that are active in the same industrial branch or are even competitors* like Swiss Microtech:

- common purchase of raw material, machines, equipments, consumables, commodities or services as well as the reduction of production costs may alone bring enough benefits to motivate a long term participation
- common marketing (participation in technical fairs) or sales activities such as using the agents or sales forces of one member to promote the whole group
- the exchange of experiences about market trends, technical subjects or even customer behaviour is also very profitable. Such a network becomes a real learning organization, which is considered as a key competitive advantage for the future (Flanagan et al., 2003)
- the level of fear is very high at the beginning of the collaboration, when some companies may be direct competitors: they think that sharing sensible data like price structures or even the names of their clients would have losing customers as a direct consequence. The future partners must commit themselves not to use the alliance to “steal” customers or make any non-loyal competition (underbidding for instance)
- trust is an absolute necessity when members could be competitors or also work for competitors, which is the case for members bringing complementary activities. With time, however, the network members will realize that really faithful customers are very rare as they also look everywhere for better conditions

New business opportunities are indispensable *for networks of complementary enterprises* wishing to develop new products or services as common activities are reduced:

- during the first years of activity, a few companies may really profit from the network as new business opportunities depend on the market and are not easily predictable. Frustration could arise for the less lucky members
- common purchases are less evident and fruitful, as the members do not necessarily need the same goods. Buying together commodities like office or IT equipment, energy or services are nevertheless possible
- common activities like training or participation in research projects should be found whenever possible to bind all members and keep motivation high
- the level of fear and the risks of conflicts are considerably lower

5. CONCLUSIONS

Collaborative networks can really help SME to survive as the trend towards further reduction of suppliers to those able to provide complete solutions will certainly continue (Guide européen des alliances, 1998). A deeper penetration into the value adding chain of the customers is a good way to become an important partner instead of remaining just a supplier among many others. Nevertheless, few collaborative networks of SME have been created and are still working after a couple of years. This could indicate that the collaboration spirit is not broadly shared among entrepreneurs who have a strong character and are probably rather individualistic. Even if rational facts like increase of market share, new business or cost reductions are key factors in evaluating the interest of a collaboration, the pleasure meeting others and sharing common activities, problems and interests should not be underestimated as the human factor is, and will remain, a central element in any enterprise.

If the economical benefits can be measured, further research is still needed to measure the “soft” factors like the exchange of experience and knowledge or the increased sentiment of security achieved by the collaboration.

6. ACKNOWLEDGMENTS

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7. REFERENCES

- 1 Bigoni P, Glardon R, Pouly M, Décolletage dans l'arc jurassien, Rapport final CTI, 1998
- 2 Coué, D. Etude sur la sous-traitance européenne, MIDEST 2000
- 3 Flanagan K, Green L, Malik K, Miles I, Leitner K-H, Dachs B, Wagner P, Weber M, The Future of Manufacturing in Europe, 2015-2020, Industrial approaches, Final Report, March 2003
- 4 Flanagan K, Green L, Malik K, Miles I, Leitner K-H, Dachs B, Wagner P, Weber M, The Future of Manufacturing in Europe, 2015-2020, The challenge for sustainability, Final Report, March 2003
- 5 Guide européen des alliances entre PME de la sous-traitance, Office des Publications des Communautés Européennes, Luxembourg, 1998
- 6 Katzy B, Schuh G, Millarg K, Die virtuelle Fabrik – Produzieren im Netzwerk – neue Märkte erschliessen durch dynamische Netzwerke, in Technische Rundschau 43/1996, pp 30-34
- 7 Liikanen E, Commissioner for Enterprise and Information Society, Keynote speech at the RIOST Conference “European Enterprise Policy : inter-enterprise relations and Subcontracting”, Milano, 2000
- 8 Pouly M, Glardon R, Huber C, Competitor based strategic networks of SME, in Knowledge and Technology Integration in production and Services, pp149-156, edited by V.Marik, L. Camarinha-Matos, H. Afsarmanesh, Kluwer Academic Publishers, 2002
- 9 Schuh G, Millarg K, Göransson A, Virtuelle Fabrik, neue Marktchancen durch dynamische Netzwerke, Carl Huber Verlag, Munich, 1998