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ADAPTATION THROUGH COOPERATION IN A SUPPLY NETWORK

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Abstract
The paper is focusing on adaptive and cooperative behaviour, which takes place in a supply network. The author seeks to describe motives and outcomes of the adaptation process. The article is based on a case with 10 suppliers, which together take the initiative and starts a calibration laboratory in order to meet the dimensional specifications and quality requirements set by the focal buyer. The suppliers adapt and cooperate by developing their production process to achieve a common goal, i.e. to improve the quality of produced goods.

INTRODUCTION

Research on relationships and networks has been in focus for the last decades. Technical progress creates new possibilities and demands and these need to be fulfilled by everyone in the supply chain. None of the parts of the supply chain can though neglect the importance of quality if the end product is to be competitive. The quality issue is a must for every company, which wants to stay in business. There is no demand for products of poor quality. The key word in this article is calibration. A continuous calibration of measuring equipment implies that one can guarantee a continuous flow of products that fulfil the required specifications.

Aim

The aim of the paper is to provide a descriptive study of technical adaptation and cooperation, which takes place in a supply network in the metal industry. The supplier companies are studied in order to map out the motives and outcomes of the adaptive behaviour.

ADAPTATION IN SUPPLY NETWORKS

Adaptation between counterparts takes place because of different reasons. One of the reasons can be that both counterparts in a relationship need to do the necessary adjustments in order to increase the benefits for both parties. The parties in a business relation can have both common and contradictory interests and the parties can choose to cooperate or not. Cooperation can be effective in situations where the actors have both common and conflicting interests (Axelrod, 1984). On a network level one can study these relationships vertically, horizontally or as a combination of both. In each of these relationships one can find adaptations to a larger or lesser degree.

The interaction that takes place between buyer and seller can demand and create possibilities for specific adaptations (Gadde & Håkansson, 1993). Organisations achieve their own goals by affecting the behaviour of other organisations by using their power, i.e. organisational behaviour can be seen as the consequence of influences (Pfeffer &Salancik (1978). The power balance is affecting the adaptive behaviour within the relationship between the parties, but adaptations are also caused by other factors in addition to power (Brennan & Turnbull, 1999). Power affects the behaviour of both buyer and suppliers. The buyer safeguards his interests by establishing control over the supplier’s operations. This vertical control prevents his assets from being expropriated. (Heide & Johnson, 1992)

Both firms in a relationship tend to adapt in one way or another. The adaptations take place continuously as the relationship develops through its different stages. Technical adaptations in the feature of the product or in the production process are common in intercompany relationships (Håkansson & Snehota, 1995). The adaptations in the relationship might look different when studied at different times of the interaction process.

Adaptation and cooperation are important elements in the network approach. Gadde & Håkansson (1993) discuss the reason for adaptive behaviour. The reason for adapting is, according to them, more significant if the difference between the parties is large, i.e. the adaptation will be in a direct proportion to the differences that exists between the parties.

Johansson & Mattsson (1987) mention five different kinds of adaptations. These are technical, logistical, administrative, knowledge and financial adaptations. This paper focuses on technical adaptations. Brennan & Turnbull divides the adaptation into three different parts, which are a motivation part, a process part and an outcome part. The motivation part is preceding the process part and results in the outcome part. (Brennan & Turnbull, 1996) Buyers and sellers in the industrial market have devices and equipment and these are to be combined in a sufficient way. Naturally this implies both possibilities and requirements in terms of techniques. (Gadde & Håkansson, 1993)

Brennan & Turnbull (1996) mention five metaphors, i.e. adaptation as an investment process, a decision-making process, a political process, a socialization process, and as an evolutionary process in the process of adaptation. Together these metaphors provide a coherent process view of the adaptations in the buyer-seller relationship. Fang (2001) adds an additional metaphor, the cultural one.

Adaptation and quality

Quality is something that should concern every aspect of a firm, which wants to survive and develop. It is not only the quality of the result, but also the quality of processes that count as quality. Adaptation and commitment are also related to each other to a great extent. In a long-term relationship both parties commitment will in time have been demonstrated by the adaptations done (Ford, 1997). Nevertheless, in a long-term relationship between buyer and seller the supplier can seem less committed in his most committed stage than during the development stage of the relationship. (Ford, 1997) The character of the adaptation is also, to a great extent, dependent on the type of the product (Gadde & Håkansson, 1993). To define the characteristics of a relationship, at least one of the partners adapts to the needs of the other. (Brennan & Turnbull, 1995)

Adaptation and cooperation in a supply network

When a company in a business network decides to cooperate with other companies it can choose to cooperate vertically or horizontally or have a combination thereof. Both alternatives have its possibilities. A network is just a large number of possible structures (Skjott-Larsen, 1998) to be combined in different ways depending on the motives for the activities. The network creates different possibilities for different solutions. The opportunities often lie within the regions where the networks are located. In geographical networks the location affects business interaction and its regional and international setting (Törnroos 1997).

There also has to be motives for the companies to cooperate. According to Goetsch and Davis (1994), the success of a manufacturing network is dependent on the interdependence of the

member companies and the mutual need. It has to be worthwhile for both the companies to cooperate and create value (Håkansson & Snehota 1995). An approach based on partnership and collaboration is though a better one than an approach based on competition (Raatikainen 1992). What makes the relationship worthwhile for the parties is the concern with cooperation and value creating. (Håkansson & Snehota 1995).

THE EMPIRICAL STUDY

Methodology

The method used in this paper is qualitative. The article is based on a case with 10 suppliers, which together take the initiative and starts a calibration laboratory in order to meet the dimensional specifications and quality requirements set by the focal buyer. The buyer is an international engine manufacturer. The article is based on 8 personal interviews with respondents who were involved in the founding process of the calibration laboratory. Four of the interviews were done with respondents in the supplier companies, which were involved in the founding process of the calibration laboratory. One of the interviews was done with a respondent responsible for quality in the production process at the buyer, one interview with the person responsible for the calibration laboratory at the local polytechnic school, were the laboratory is located, one with the person responsible for the calibration work in the laboratory and one with a respondent who were the head of the local business association at the time of the foundation of the laboratory. This respondent was one of the persons who were most involved in the founding process of the laboratories. The respondent later moved over to work in one of the supplier companies using the laboratory.

The interviews lasted 1-1,5 hour. The respondents were asked the same questions, but the succession of the questions varied depending on the sequence of the themes discussed. Additional follow-up questions were asked when needed. All of the interviews were recorded and later subscribed. The size of the studied supplier companies varied between 1-63 employees. They all sell their products to the focal buyer directly or through another supplier.

Results

In order to ensure that the dimensional specifications given by the buyer are met, it is most important that the suppliers use accurate measuring tools, with which machining tools are checked. The measuring tools used can be calibrated, for example, against reference materials in a controlled laboratory environment. The temperature and humidity has to be controlled in the room where the calibration takes place. The calibration can also partly be done at the customers´ premises, in addition to conducting the calibration in the laboratory. The calibration is a continuous process that has to be repeated as long as the tools are used in the production process. All the control and measuring equipment are to be calibrated regularly and the intervals are to be chosen in a way to secure measuring precision (9000 goda råd att bygga kvalitetssystem i företag, 1990).

The suppliers play a more and more important role in the supply chain and the requirements should be similar in the whole supply chain in order to guarantee a quality product. The reality for the small suppliers in the supply network is therefore that the requirements from the focal buyer are not easily fulfilled. It is often a continuous struggle with keeping quality at a high level and keeping the costs down.

In the studied case the focal buyer is strong and dominates the supply network. The initiative to start calibration came from the buyer company. The head of the quality department contacted the local business association and expressed a wish that the suppliers would start

focusing on this particular area. The buyer did not demand calibration from its suppliers, but said it would be recommendable. After this the buyer was not involved in the project. Three parties were taking care of practical arrangements for the laboratory. One of the parties was the local business association, one was a local vocational school and the third one was a local polytechnic. The focal buyer was contacted again when it was time to buy a share of the cooperation. The calibration laboratory was established in 1994 and placed on the premises of the vocational school. It was later moved to the local polytechnic.

Among the 10 companies, 8 of them were suppliers of the focal buyer in the metal industry directly or through another supplier on a higher level in the supply chain. Some of them were competitors. All of the suppliers contributed with money to the founding process of the laboratory. The eleventh financial contributor was the focal buyer. The laboratory was mainly founded for the supplier companies needs, but the schools involved did also expect the students to be able to benefit and learn from it. The buyer had already calibration possibilities of it's own. It was however only a calibration workstation, not a laboratory. The suppliers use the common calibration laboratory. The respondents reported that they had not calibrated at any of the other calibration laboratories in the country before they started to use the local one. Some of them had just simple workstations at their companies were they calibrated their tools. The new laboratory could also provide additional calibration services to other non-member companies in the area, companies that were not suppliers to the focal buyer. Today there are about 35 suppliers using their services. During its first years of operation the laboratory provided the services at a reduced rate to the 11 founding companies.

The respondents were all asked about the founding of the laboratory and the alternatives, and motives for choosing this alternative. The usage of the laboratory was discussed, the benefits and the satisfaction with the services and equipment. The suppliers all agreed on the fact that the start-up of the calibration laboratory affected the quality work in their company in a positive way. The timing of the foundation was also very good.

The reliable calibration of the suppliers´ tools enables the focal buyer to continue to focus on in-house processes and its own quality system. The calibration laboratory helps all the involved companies to continue with their quality improvements. Adaptation to demanding customers can strengthen the suppliers' competitive position as the result is superior products or production systems (Hallén, Johansson and Seyed-Mohamed, 1991). The final products have a better quality and the suppliers' position is hereby improved. The calibration may also enable the suppliers to reach new customers in markets where increased quality is required. Calibration is required in the ISO 9000 standard. The respondent of the focal company said that they wished that the suppliers would start calibrating. The suppliers said in the interviews that they felt that the buyer required it though it was only proposed. The suppliers without a certified quality system said that they would not certify it until their biggest customers demanded it.

The studied case is an example of cooperation around critical and important issues for the parties involved. The responsibility of the final quality of the finished product is divided among the parties involved in the supply chain.

DISCUSSION AND CONCLUSIONS

The suppliers in this case could achieve a common goal by founding a common calibration laboratory. The calibration laboratory was founded on the initiative of the buyer and the local

business association was the party, which helped out with the practical arrangements. The other parties who helped out were a local vocational school and the third one was a local polytechnic. The focal buyer said that they wished that the suppliers would start calibrating. This was however no demand and the buyer did not want to calibrate the suppliers measuring equipment. Having the calibration done by a third party is also an advantage for the suppliers. This case is an example of how businesses today try to affect the direction from quality inspection towards preventive actions in the production process.

Starting a project like this had benefits for all involved parties. The focal buyer could improve the quality of the end product and the suppliers could guarantee the quality of the delivered product towards the focal buyer and other customers as well. Time could also be saved when the companies did not have to send their measuring tools further away to other calibration laboratories in other parts of the country. Costs could be kept at a lower level when the calibration equipment could be bought collectively. A majority of the interviewed suppliers said that the incentive to start the calibration laboratory had a positive effect on the quality work in their company.

The process has been a positive one for all the parties involved. The users of the laboratory are satisfied with the services. It's existence as a local service provider saves both time and money for the companies using it. When asked about their experiences of founding the laboratory together with their competitors, i.e. cooperating with them, the suppliers answered that there had been no specific problems.

Too much adaptation towards the buyer may result in too strong dependence on the buyer, which in turn may possess a risk to the supplier. However, in the present case the buyer-related risk does not increase through the adaptation, since the suppliers also get a stronger position on the market. If the buyer had chosen to provide the calibration service itself, instead of encouraging the suppliers to establish their common service, the suppliers´ dependence on the buyer would have increased.

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