

THE CHANGING ROLE OF INTERMEDIATION

Competitive paper

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Abstract

Intermediation and intermediaries are primarily dealt with in literature on distribution channels, corresponding to an era when mass production and mass distribution ruled the game. Vertical integration in manufacturing was used to secure efficient operations, and intermediaries were providing functions such as promotion, physical distribution, warehousing, financing etc, in order to capture the discrepancies in producer stocks and customer assortments. However, in today's industrial reality vertical integration is no longer the primary alternative for manufacturing operations and the reliance of outsourcing implies that operations are distributed over many specialised companies. Moreover, the previous sharp distinction between production and distribution are blurred, and just-in-time deliveries and build-to-order production change the division of labour and impact on the forms of intermediation. Thus, the aim of this paper is to explore the role of intermediation and intermediaries in today's industrial arrangements. We will rely on the industrial network model (Håkansson et al., 2009) and an empirical study in the textile industry. In order to capture the complex issues described above a case study approval is required, suggested to be particularly useful when a holistic perspective is needed. Our findings show that in today's business reality the understanding of intermediation as the process of bringing together heterogeneous supply and heterogeneous demand is enhanced if the analysis of actor intermediation is supplemented with analysis of intermediation in the activity and resource layers. However, in relation to this conclusion it is important to clarify that the call for enhanced attention to intermediation in the activity and resource layers is not due to changes in the actual occurrence of intermediation in these two layers. Intermediation in these respects has always been critical to business performance and historically it was considered so important that it had to be controlled within the ownership boundary of the company (vertical integration), while today intermediation of activities and resources increasingly cross ownership boundaries. Thus, the main difference is related to intermediation in the actor layer. Furthermore, the changes in business reality make intermediation increasingly important since when firms specialize in their activities and increasingly rely on the resources of others, various forms of intermediation have their particular consequences for efficiency and effectiveness. Thus, intermediation has to be on the top of the management agenda. Moreover, historically intermediation was associated with particular firms identified as intermediaries. However, today all firms must see themselves as involved in intermediation through numerous connections to different business partners and their activities and resources. In this respect, from a network point of view every actor is an intermediary.

Keywords: intermediation, intermediaries, industrial network approach, textile industry

INTRODUCTION

Intermediation is critical to any industrial arrangement since these functions “bring together heterogeneous supply on the one hand and heterogeneous demand on the other” (Alderson, 1965:20). However, research on intermediation has focused only on a limited aspect of this ‘bringing together’. Alderson claimed that the main discrepancy between supply and demand concerned the one between ‘producer stocks’ and ‘consumer assortments’. This view has continued to prevail and so intermediation and intermediaries are primarily dealt with in the literature on distribution channels. This focus is explained by the fact that industrial operations for a long time were ruled by the ‘logic of aggregation’ characterised by mass production and mass distribution (Lampel and Mintzberg, 1996). A particular feature of this era was that vertical integration in manufacturing was used as a means of securing efficient operations. This means that firms identified as producers normally controlled all steps of the manufacturing processes until the finished product arrived at ‘producer stocks’. The bridging to the ‘consumer assortments’ then was conducted by intermediaries, the main responsibility of which was to supply the users of these products. Intermediaries were involved in numerous activities such as promotion, physical distribution, warehousing, financing, etc. However, the features of the product normally were unchanged during this intermediate stage.

These basic conditions are changing in today’s industrial reality. First, vertical integration is no longer the primary strategic alternative for efficient manufacturing operations. Heavy reliance on outsourcing implies that operations previously controlled within the ownership boundary of one firm are currently distributed over many specialised companies. Therefore, intermediation across company boundaries is nowadays a main concern even in manufacturing arrangements. Secondly, when the ‘logic of aggregation’ is supplemented with the ‘logic of individualization’ the previous sharp distinction between production and distribution becomes blurred (Lampel and Mintzberg, 1996). Just-in-time deliveries (e.g. Kaneko and Nojiri, 2008) and build-to-order production (e.g. Gunasakaran and Ngai, 2005) change the division-of-labour and also impact on the forms of intermediation. For example, it is claimed that “operations related to physical features that we used to call manufacturing are now often undertaken by firms that we tended to classify as distributors and middlemen”, exemplified by service providers operating logistics hubs and increasingly involved in final assembly close to customer locations (Gadde and Ford, 2008:48).

These fundamental changes in the industrial reality call for reinterpretation of the bridging between heterogeneous supply and heterogeneous demand. The aim of this paper is therefore to explore the role of intermediation and intermediaries in today’s industrial arrangements. In doing this we rely on the industrial network model (Håkansson et al., 2009) and an empirical study in the textile industry.

ANALYTICAL FRAMEWORK

“Exchange through intermediaries arises out of considerations of efficiency in exchange itself” (Alderson, 1954:29). In similar way it is argued that intermediation is primarily about increasing transaction efficiency through reducing “the number of transactions between producers and final users” (Rosenbloom, 1996). In this way intermediation is assumed to generate value by providing place utility and time utility, through connecting processes separated in terms of geographical location and the appropriate time for production and consumption.

However, mainstream distribution literature also identifies a third value generator: form utility. In the logic of aggregation the main concern in distribution was about making ‘finished’ products available to customers without affecting the physical features. Therefore, form utility primarily was discussed and analysed in terms of the requirements for packaging.

We argued above that in today’s business reality the end product state is reached at different locations in a supply chain: some products still become finished in a factory of a large manufacturer, while others may be assembled by a local dealer (see e.g. Curry and Kenney, 1999 for an example in the PC industry). Therefore, the generation of form utility has become increasingly important and needs to be considered in the analysis of the role of intermediation. The inclusion of form utility shifts the attention from a focus on transaction efficiency towards the effective utilisation of the resources that are involved in the successive changes of product features. Moreover, enhanced outsourcing of manufacturing operations provides benefits in terms of specialisation and economies of scale of activities (Quinn, 1999). However, these specialised activities and the dedicated resources on which they rely need to be synchronised and therefore intermediation across company borders is increasingly important (Ford et al., 2003). Intermediation is thus no longer only a question about connecting firms. The particular way in which activities are coordinated and resources are combined is an even more important issue requiring deep probing network analysis (Hulthén and Gadde, 2007).

These changes make the role of intermediation more complex and calls for a holistic perspective. The previous focus on the business exchange between two actors needs to be supplemented with analysis of the features of the activities involved and the resources exploited in the undertaking of these activities. These are the arguments for applying the industrial network approach and primarily the ARA-model (Håkansson and Snehota, 1995).

Intermediation and activities

The traditional way of conceptualising intermediation is to show how an actor (a middleman) connects other actors (producers and consumers). The same principle will be applied in the exploration of intermediation in the activity and resource layers. The main feature of the activity layer in networks is that no activity is isolated from other activities: a specific activity is based on activities already undertaken and leads to further activities. In this way activities are sequentially related implying that they have to be undertaken in a specific order, such as component manufacturing - assembly - warehousing - transportation to customer.

Intermediation in the activity layer would then be concerned with how a specific activity links other activities. In Figure 1 activity D is intermediating between activity C and activity E. The way in which activity D is conducted affects the two other activities, at the same time as they affect activity D, since “the execution of any activity is dependent on other activities” (Håkansson et al., 2009:96).

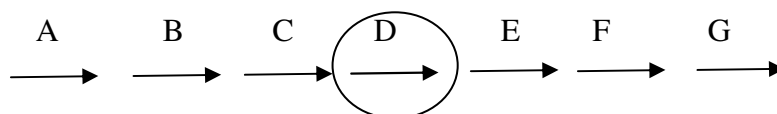


Figure 1. Intermediation among sequentially related activities.

Activities that have to be undertaken in a specific order are identified as ‘complementary’ activities (Richardson, 1972). This serial interdependence put its specific constraints on the composition of an activity structure. Serial interdependence can be further strengthened. This happens when the relatedness of two activities imply that once the first has been undertaken it needs to be followed by a specific form of the second activity. For example, if activity D above results in a standardised product and activity E provides a customer specific feature the following activities will be directed towards a specific end-customer. In this case activities E-G are not only complementary, but closely complementary. Once an activity leads to end customer specific features its output is useful only in relation to this end customer. Just-in-time deliveries and build-to-order production are examples of activity structures based on closely complementary activities and thus characterised by strong interdependence. These activity configurations are in need of substantial coordination and quite different from previous arrangements where inventories functioning as buffers reduced interdependence.

Efficiency in a chain of activities is thus affected by the serial relatedness that calls for coordination. Another dimension relates to the efficiency in the undertaking of an individual activity. This efficiency is also affected by the particular intermediation – the characteristics of activity D will therefore impact on the efficiency of activities C and E. This impact is primarily indirect since the main influence of D on C concerns the opportunities to undertake activity C in the same way in the other activity chains in which it is involved. The concept to apply in this type of analysis is similarity (Richardson, 1972). Two activities (such as C in this chain and in another chain) are similar when they rely on the same resource for their undertaking. Increasing similarity thus is about increasing specialisation of an activity which provides economies of scale. On the other hand the output of such activities is a standardised product, which makes customisation problematic. Increasing the similarity among activities thus reduces the opportunities for customisation.

Central issues in the exploration of intermediation and activities are thus analysis of interdependence in terms of complementarity and similarity.

Intermediation and resources

Following the above principle, intermediation in the resource layer is illustrated by Figure 2, where R1 connects four other resources.

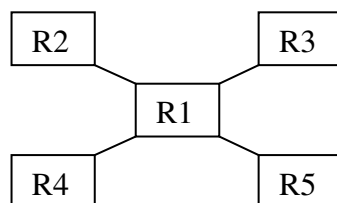


Figure 2. Intermediation among resources.

In relation to the resource layer intermediation is highly significant since “the value of a resource is dependent on its connections to other resources” (Håkansson et al., 2009:71). This conclusion follows from the heterogeneity assumption concerning resource utilisation.

Accordingly, the actual intermediation in relation to other resources will determine the value of the individual resource. The form of connection between two resources is identified as the ‘interface’ between them and this interface take different forms owing to the adaptations of the resources (Håkansson et al., 2009). Adaptations improve the joint performance of two resources since their interfaces fit better. For example, the more R1 and R2 are adapted, the better they function in relation to each other and the value of each is thus enhanced. However, through these adaptations R1 may function less well in relation to R3 since the features of this resource have been adapted to other resources. Therefore, the value of a resource is dependent on its direct interfaces to other resources and on indirect connections to other resources.

There are two important issues to deal with when it comes to the principles for intermediation and their impact on value generation. Firstly, each individual resource has a certain scope of abilities, i.e. it can be used for various things. As claimed above the value of a resource is determined by the ways in which its heterogeneity is exploited. Therefore, the form of intermediation will impact on the value of R1 which in turn impacts on R2-R5. The actual intermediation affects how heterogeneity is exploited, which in turn depends on the adaptations of resources. The exploitation of R1 can be done without adaptations so that R2-R5 exploit R1 in a standardised way which leads to low heterogeneity, or it can involve adaptations leading to differentiated exploitation and thus enhanced heterogeneity in resource utilisation.

Secondly, each resource has a certain capacity in terms of the quantity of its output, such as volume, speed, etc. The adaptations made in relation to the other resources determine the way the capacity of R1 is utilised. The more standardised the utilisation, the greater the economies of scale and the better the economic performance. We can also express the same conditions by saying that the greater will be the similarity of the activities relying on R1.

Thirdly, previous research shows that the interplay between resources not only impacts on capacity utilisation and exploitation of heterogeneity. The way resources are connected determines also the evolution over time of the features of the resources. Several studies have applied the ‘4R-model’ (Håkansson and Waluszewski, 2002) in the analysis of the development of resources with a particular emphasis on the interplay between physical and organisational resources (e.g. Baraldi, 2003; Wedin, 2001).

Central issues to explore concerning intermediation among resources are the adaptations between resources and what consequences they may have for exploitation of the heterogeneity of a resource, the utilisation of its capacity and the development over time.

Intermediation and actors

This is the layer of the network assumed to be central for intermediation since intermediaries are actors and intermediation used to be concerned with the connecting of firms. Also from the industrial network perspective intermediation among actors is central. The connections among actors are therefore crucial to the understanding of intermediation, since interaction is a prerequisite for resource combining and activity coordination, and also determines the position of an actor in the wider network context (Håkansson et al., 2009). According to the industrial network model interaction takes place in connected business relationships that evolve over time (Ford et al., 2003). The content of these relationships determine the position of the individual actor. This content (or the substance) contains the social and organisational bonds between the two actors, the ties among their resources, and the links among their activities (Håkansson and Snehota, 1995).

In terms of the actor layer two issues concerning intermediation appear important. The first is the position of the actor in the activity and resource layers: i.e. what activities to conduct within the firm and what resources to control through ownership. The second issue concerns the connection between the individual firm and other firms with regard to intermediation in the three network layers. A consequence of our view of intermediation is that intermediaries appear not only in distribution. Since intermediation is about connections in the resource and activity layers, any firm is an intermediary in some respect. We illustrate this phenomenon with an empirical example of the intermediation undertaken by a firm that normally would not be considered an intermediary.

METHOD

Capturing the complex issues identified above require a case study approach. This methodology is suggested to be particularly useful when a holistic perspective is needed (Eisenhardt, 1989; Dubois and Araujo, 2007). Accordingly, a case study within the textile and apparels has been carried out. Data has been collected mainly by site visits and interviews, but in addition, secondary data such as brochures; flow charts etc. have been used. The study takes its starting point at a shirt manufacturer, SM, where we have interviewed people from logistics, purchasing, marketing, production, design as well as the CEO. In total thirteen interviews were conducted at SM: some people were interviewed several times and we spent one day following the production of shirts in order to collect data. Moreover, interviews with two different retailers selling SM's shirts were made. Furthermore, in order to understand the suppliers' situations we made site visits to four different suppliers in two supply chains. In the first supply chain consisting of a vertically integrated company performing spinning, weaving and finishing four interviews were made. In the second supply chain two interviews were undertaken at a company working as a coordinator of weaving and finishing; three interviews were made at a weaving mill; and finally, three interviews were made at a finishing company. As in the case with SM, people working with different functions such as logistics, purchasing, production etc. were interviewed at all these suppliers. Moreover, we followed the production at each of these suppliers, thus we were able to study how spinning, weaving and finishing is carried out.

CASE STUDY

In this part of the paper the case study is presented. The study takes its starting point at a Swedish shirt manufacturer, SM, producing men's shirt of a very high quality that are wrinkle free. To begin with, we will describe the demand side of this focal company, followed by a focus on SM itself and finally, the supply side of SM will be portrayed.

SM's Demand Side

For SM demand follows the typical pattern of textile and apparels with a product range characterized by a huge number of variants regarding product types, models, fabrics, quality, colours, patterns etc. These features in combination with short life-cycles, fast changing fashion habits and a high degree of impulse purchasing impose high volatility and low predictability of demand for specific variants (Bruce et al., 2004; Christopher et al., 2004). A typical fashion retailer in Europe handle up to 60 000 SKUs (all different size and colour variations of a single product would be one SKU) per year with product life cycles (from first offering to discounting) of an average of six weeks (Masson et al., 2007).

Hence, retailers in the apparel industry face a great uncertainty in terms of which variants that will be demanded by customers and need to be able to modify preliminary orders during seasons to adjust to the actual buying patterns of consumers. Accordingly, manufacturers of clothing will have to cope with these requirements for modifications in terms of design, quantities and due dates of its products.

Retailers are offered two seasonal (spring and autumn) collections of shirts by SM. Six months in advance before each season begins retailers will be visited by sales representatives from SM. There are 1500 different stores in total (exclusive stores, menswear departments and SM's own brand stores) that sells SM's shirts worldwide. Retailers can order shirts from the sales representatives in a period of seven to ten weeks, but they will not be promised specific delivery dates. These shirts that are sold in before a season begins will be transformed to so called fixed orders (FOs) for SM. About 70 % of these FOs from retailers allows for the planning of activities for SM in terms of fabric procurement, sewing and other operations. In addition, retailers can any time during the seasons order shirts from a "catalogue" (shirts that are labeled stock service shirts (SS) by SM). The idea is that when a retailer orders a shirt during season from this catalogue the shirt should already be in stock at SM and can thus be transported to the retailer in just a few days. The entire volume of the SS orders and the remaining part of the fixed orders (30%) are based on forecasts and consequently, these shirts are produced on speculation. Forecasting the 30% of FO sales produced after start of fabric production or during season in terms of SS shirts is a difficult task for SM. This mixing of two order types is a common procedure in textile and apparels.

Consequently, during a season retailers will frequently place orders of shirts from the SS collection. This is done by phone, fax or by using use web tools provided by SM. In addition to a common web ordering system there is also a replenishment system for the stores, creating automatic ordering of shirts based on sold products and preferred stock levels. Not only for the convenience of the stores, this is a way for SM to get updated point-of-sales data from the stores, which can be used for planning the production of shirts. Normally such a SS order involves just a few shirts. FOs can in contrast vary from 80 up to 2400 shirts and add up to include large volumes and occur quite seldom and infrequent, fluctuating due to seasonality. In total, year 2003 FOs counted for around 130 000 shirts where at the same time, shirts from the SS collection corresponded to slightly fewer shirts (120 000 shirts).

Altogether in stock service there are about 130 different models offered as a standard collection and about 20 models that are offered as “fashion shirts” twice a year. About fifty different fabrics are used and the shirts vary in terms of collars, cuffs, front, extra long sleeves etc. Every shirt is made in ten to fifteen different sizes, ranging from size 37 up to 46 (some up to size 51). About half of the collection of shirts in terms of fabric and model are exchanged every year. Some of the models of shirts exist both in the FO collection and the SS collection. The end-customer (the consumer) also has the alternative to order “made to measure shirts”, specifically adjusted to the customer’s preferences (in total 6000 shirts in year 2003).

The Shirt Manufacturer SM

The first step in the process of making a shirt is cutting of the different pieces in a shirt (in average a shirt consists of 17 different pieces). After cutting, preparation work including ironing and placing of interlining takes place. The last phase of the preparation work is the sorting of the pieces and the hanging of these in the right order on a conveyor system, which transports all the pieces to different work stations through the production of the shirts. When the hanging in the conveyor system is completed, the shirts are registered to move on to the following production phase: the actual sewing consisting of 22-25 different steps.

SM operates one plant in Sweden and two dedicated production lines in Estonia that are using the conveyor system. In addition, more capacity can be accessed by pure subcontracting from the plant in Estonia and two other plants in Estonia and Lithuania. The system of a mix of subcontracting and fully owned facilities allows for sufficient flexibility to match capacity requirements with demand. Both the stock service collection and the complementary fixed orders that are placed during the season call for rapid adjustment to changes in terms of quantities and delivery dates. The production process takes around 4-5 weeks for the plant in Sweden whereas for the production lines at the Estonian plant it is slightly longer, about 6-7 weeks. After it has been made the shirts are sent to the central warehouse in Sweden if it is SS shirt or sent to a logistics provider and then to stores if it is a FO shirt. In the warehouse in Sweden in average 30 000-40 000 shirts are kept in stock, with a maximum capacity of 100 000 shirts. When SS shirts are requested by retailers they are sent to one out of four distribution centres around the world, and from there delivered to stores (Figure 3).

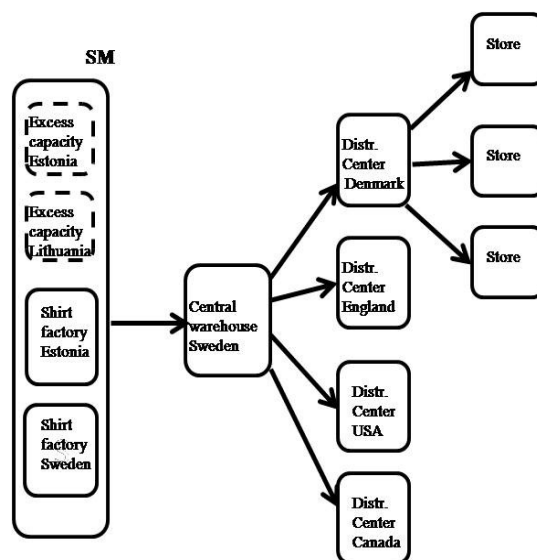


Figure 3. SM and its demand side.

SM's manufacturing facilities are designed to cope with the variables at the retail level in terms of changes in quantities, delivery dates and variants, and consequently handle frequently changing production plans and manufacture limited batches. Even so, huge inventories of both fabric and shirts are necessary due to the long lead times and the large batch sizes required by SM's suppliers of fabric. Maintaining these inventories is risky since stock may be obsolete before it is sold and holding inventories of fabrics and shirts are costly. These costs can be traced primarily to the unwillingness of SM's suppliers to support SM's adjustments to the requests from retailers for changes in delivery times and quantities. Consequently, the managing director of SM poses the questions: "Why can't the fabric suppliers be more flexible in dealing with our orders?" In order to understand these conditions and the perceived "unwillingness" of the suppliers to adjust to the desires from SM, we need to consider the making of fabric and accordingly, the situations for the suppliers of fabric.

SM's Supply Side

There are several different steps (each step also consists of many sub processes) in the making of fabric. The first step is cotton farming where cotton is cultivated and harvested. After that cotton wool is used as input to spinning where yarn is made. The next step is weaving to get fabric and finally, the fabric undergoes a finishing process. (Figure 4).

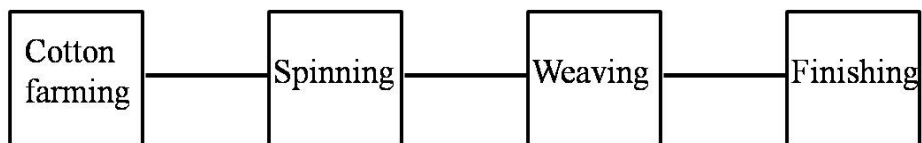


Figure 4. Different steps in the making of fabric.

SM uses fabric of a very high quality that in addition has to be wrinkle free. In order to obtain this cotton wool with a staple length of a minimum of 3.2 centimetres are needed. Moreover, the cotton wool is spun to yarn in spinning mills specialised in using a double twisting technique which can only be used on long staple cotton. The yarn is used for weaving, which requires specific techniques and looms that are specialised on using double-twisted yarn. Reliability in the supply of yarn is crucial to the weaving process which makes the weavers holding yarn in stock. Finally, the fabric undergoes the finishing process, consisting of up to 17 different steps. The number and types of process steps vary from fabric to fabric depending on different feature requirements, such as a specific visual appeal or wrinkle freeness. In average it takes 15-17 working days for one lot of fabric to undergo all the required steps for finishing. However, fabric that is used for non-iron apparel requires further treatment which adds five days to the throughput time for finishing. In total, the throughput time including spinning, weaving and finishing is 8-12 weeks.

SM purchases fabric from two different suppliers: company A and company C. Company A in Germany is a vertically integrated company which purchases cotton wool from different cotton suppliers and performs spinning, weaving and finishing (Figure 5).

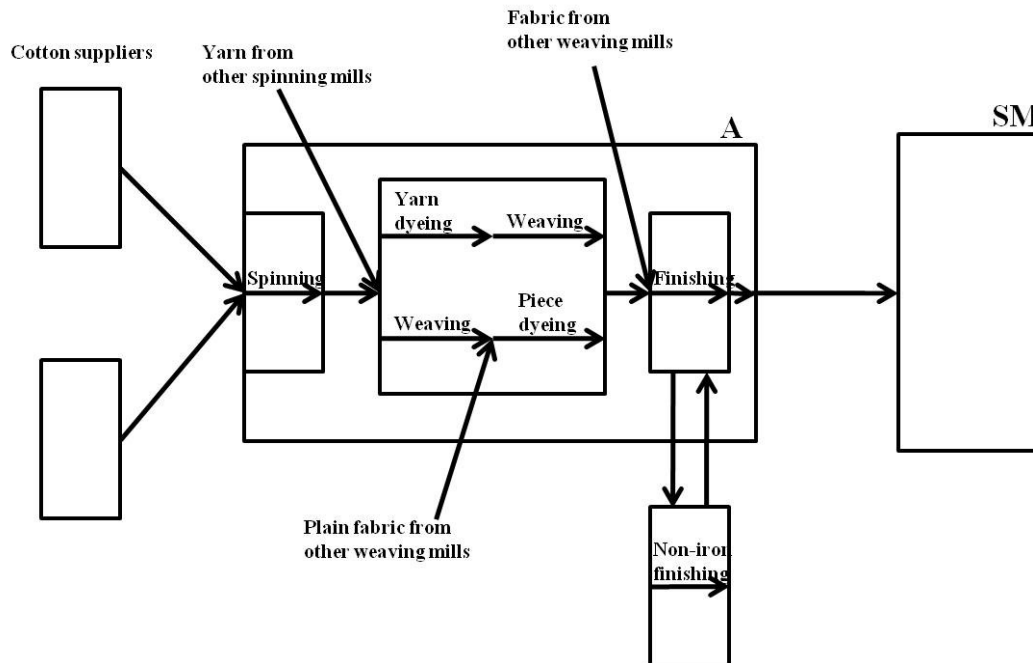


Figure 5. SM and supplier A.

Company A performs spinning for approximately 60 % of their needed yarn, the rest are purchased from other spinning mills. In the weaving mill around 25 000 meters of fabric are produced every day. Company A also purchases so called “greige fabric” from other weaving mills and colour this fabric together with own produced fabric. In total 80 000-85 000 meters of fabric undergo the finishing process every day. Company A will in addition to perform the finishing of its owned produced fabric, carry out the finishing for other weaving mills. However, the operation to create wrinkle freeness can only be performed by two companies undertaking this necessary “liquid ammonium” step. This implies that in the middle of the finishing process at company A, the fabric has to be sent to one of these companies providing this special step of finishing. After that the fabric has to be inserted into the main finishing process again at company A to complete the process of finishing. Company A will then hold the fabric in stock until its customers require it. Each season (spring and autumn respectively) around 400 different designs of fabrics are produced by company A. These fabrics are made in different colours which in total add up to around 1000 different variants of fabric.

The second supplier is a Swiss company, C (identified as a “converter”), which is part of a supply network that consists of many companies specialized in either weaving or finishing. C takes no part in the manufacturing processes but is involved in the design of fabrics and links buyers of fabrics with different providers of fabrics, such as for instance weaving mill W and finishing company F which both are used for SM’s fabrics (Figure 6).

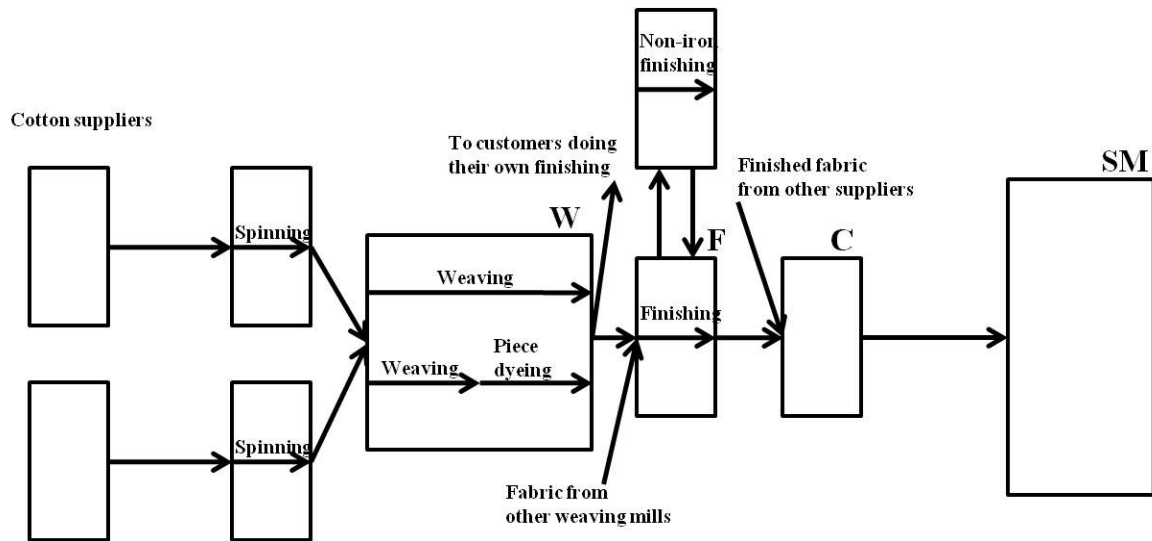


Figure 6. SM and suppliers C, W and F.

C, W and F have over time come to work fairly closely together and have among other things developed a recipe which is used in one operation in the finishing process to get the non-iron features of the fabrics. When C receives an order of fabric from a customer, C estimates the weaving capacity and finishing capacity needed and assigns the order to a specific loom and a specific finishing capability at the suppliers. When the final finishing operations are accomplished, the fabric is delivered to C which holds inventory for its customers until it is called off.

The weaving mill, W, uses many different types of yarn and has 10 main suppliers of cotton yarn. More than half of the fabric woven by weaving mill W is sent to the finishing company F for finishing operations. Company F is a so called “commission finisher” and hence, never takes title to the fabric. In total, F provides 60-65 different customers with a mix of finishing services for various types of fabrics. As in the case with company A, F has to send the fabric to one out of two companies providing the step to create a wrinkle free fabric. If the fabric is made for the converter C, after the finishing operations it will be sent back to C and kept in stock there until the fabric customer calls for it.

To sum up, this case study illustrates the situation for SM, being situated between two very different contexts regarding its downstream and upstream operations in the supply chain. On the one hand there is a need for very high flexibility as a consequence of the unpredictable nature of the demand and hence, great uncertainty in terms of estimations of future demands and demand patterns. Therefore, the manufacturers of apparels have to cope with these requirements for adjustments from its retail customers. In line with this, SM has invested in a production system that is quite suitable for quick changes. On the other hand, considering the situation “backwards” and the suppliers of fabric, the lead times are very long and there are difficulties to quickly respond to demand variations regarding changes in due dates and delivery quantities of fabric. Hence, the situation for SM is clearly a matter of being situated “in between”, when connecting these two different contexts.

ANALYSIS OF ACTIVITY INTERMEDIATION

Activities in the making of fabric are serially interdependent. Moreover, regarding the high quality, wrinkle free fabrics used by SM, these specific features are created in all the steps and thus once an activity has been undertaken it needs to be followed by a specific form of the next activity, and so on. This implies that through the whole chain of activities close complementarity is present in terms of the features of the end product.

In the exploration of activity interdependency we analyse two forms of intermediation. These forms are different with regard to where dyeing takes place. Accordingly, dyeing can enter the activity configurations in two different ways. In the case of yarn dyeing (fabrics with patterns such as stripes or checks are made by weaving yarns of different colours) dyeing enters after the spinning of the yarn and before the weaving of the fabric. In the case of piece dyeing (only single coloured fabric can be made, although the fabric can be made in different colours and in different structures) dyeing takes place after weaving and before finishing of the fabric. The case of yarn dyeing is showed in Figure 7.

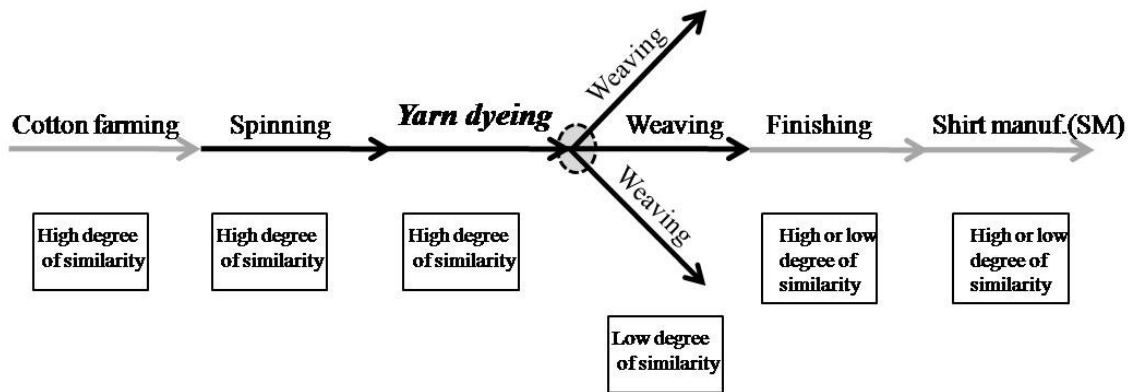


Figure 7. Activity intermediation when yarn dyeing is used.

Thus, a second dimension of close complementarity is present in terms of when the activities are performed specifically for a single customer. In the case of yarn dyeing, the point of close complementarity (marked with a grey circle in Figure 7) occurs after the dyeing of the yarn since weaving is made in different patterns (stripes, checks etc.) according to the customers' own preferences. Thus, after this point different weaving activities will take place, all directed to different customers. Moreover, the following finishing activity will be adjusted to the different weaving activities. Cotton farming, spinning and yarn dyeing are all based on speculation and many different types of yarn in different colours need to be kept in stock by the weaver. Weaving is postponed until an order of fabric is received, as is the finishing.

Furthermore, the different sequencing of dyeing has implications for the similarity of activities. Regarding yarn dyeing, a high degree of similarity is obtained in spinning. In weaving fabrics with patterns can be exclusive in terms of the design to certain customers, thus making it problematic to benefit from similarity in the weaving activities of these fabrics. In this way, it is possible to obtain a great diversity in terms of the activity configurations that can be created through yarn dyeing. Moreover, there is a high degree of similarity in cotton farming but regarding finishing the degree of similarity can be either high (if different fabrics can undertake the finishing process together) or low (if a fabric needs to undertake the finishing alone).

In the second case when dyeing takes place after weaving by using so called piece dyeing, the point of close complementarity (marked with a grey circle in Figure 8.) occurs after the finishing. Accordingly, after this point the fabrics are directed to different customers undertaking different manufacturing activities when making their own products, such as when SM manufactures its shirts.

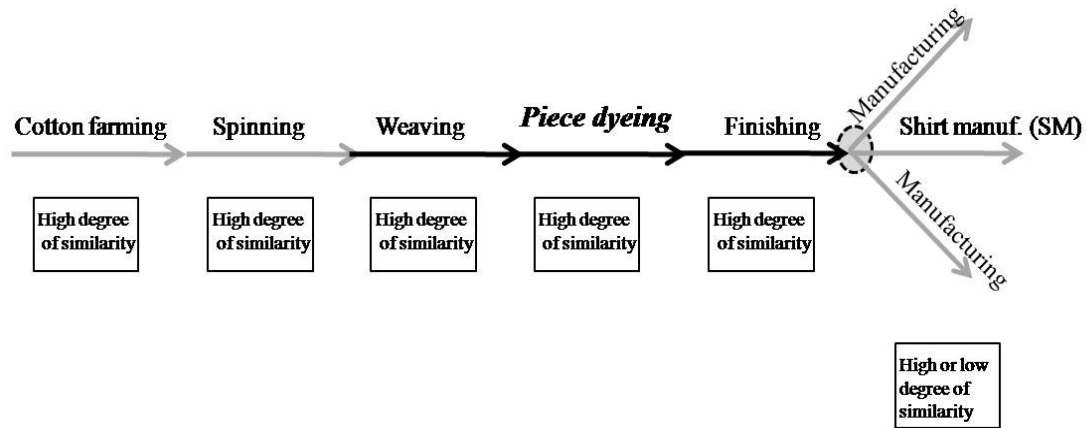


Figure 8. Activity intermediation when piece dyeing is used.

When piece dyeing is used, cotton farming and spinning are based on speculation, and weaving is done by combining received orders that together “fill up” the capacity in terms of volumes of fabric that can be produced. However, in some cases a surplus of fabric is produced regarding standard fabrics, thus the weavers are speculating in future demands of these fabrics. The same logic applies for finishing. For piece dyeing only uncoloured yarn is needed in both warp and weft in the looms which reduces the variants of yarn that have to be stored significantly, and the fabric created can after weaving be split up in different pieces that can be coloured in different colours. Thus, it is possible to obtain a high degree of similarity in weaving and finishing when in finishing different pieces of fabric that needs the same finishing are sewed together. A high degree of similarity also applies to cotton farming and spinning.

Moreover, the different sequencing of activities in terms of dyeing has implications regarding the ability to obtain differentiation. By undertaking piece dyeing instead of yarn dyeing, fabric delivery time can be reduced from the typical 60 days of using yarn dyeing to 30 days using piece dyeing (Forza and Vinelli, 1997). However, yarn dyeing makes it possible to have differentiation in terms of variety of fabrics, also making possible customization and uniqueness related to different customers’ preferences. By using piece dyeing and hence a standardisation of fabrics there is the alternative to direct the fabric to different customers, and at the same time the activity configuration is very cost efficient and there are abilities to benefit from scale economies in the different operations since there is a high degree of similarity in these.

Thus, the form of intermediation applied impacts on the efficiency in activity patterns through the particular combination of similarity and diversity among activities. The different ways of organizing activity patterns and accordingly, the different activity configurations that are obtained will exploit the existing resource constellations differently. We will therefore move on to analyse the combining of resources and its implications.

ANALYSIS OF RESOURCE INTERMEDIATION

The long lead times in the textile chain is explained by the features of the individual facilities and the adjustments companies do in order to create efficient combinations of various customers' orders. For instance, in finishing different lots of fabric requiring the same chemical treatment are combined, sewed together and finished together in order to avoid the long set up times when chemicals have to be changed. Efforts like this aim at enhancing the utilisation of the capacity of individual resources. Many production facilities are costly capital investments that need to be kept running as much as possible, with as few stop as possible and with an output of large volumes of fabric and in this respect standardisation is preferable in order to reap economies of scale. However, customers also demand a variety of fabrics in terms of colours, texture and pattern, and in different volumes which interferes with attempts to economise on scale of the individual resource, such as a loom. A loom has the capability to fulfil all these various requirements, but if every order of fabric would be dealt with in isolation, customers would have to wait for a very long time to receive their fabric. Moreover, it would be a very costly way of producing fabric.

The utilisation of a loom is an example of intermediation in the resource layer since it contributes to the bridging of heterogeneous supply and heterogeneous demand. By combining orders from different customers the features of a resource can be exploited so that capacity utilisation is enhanced (Figure 9).

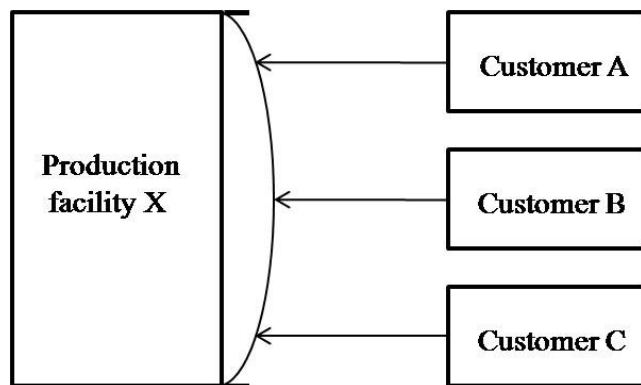


Figure 9. Standardised offering and its exploitation of a resource.

The requirements posed on this intermediating resource depend on its connection to the particular requirements of the resources on its customer side, represented by A, B and C. If the three customers all order the same standard fabric (for instance white fabric), their orders can be combined and produced jointly in the loom. If the total volume is smaller than the full capacity of the loom in terms of a batch of fabric, the weaver can produce with some surplus and keep the extra part in stock. This can be done without great risk since it is a standard fabric that can be sold to many different customers, in a colour that is not very sensitive to changes in demand from customers. In terms of very basic fabrics such as plain white this is the normal manufacturing approach of a weaver in order to benefit from large-scale manufacturing. In terms of our concepts in the analytical framework this approach is favourable to capacity utilisation, while the exploitation of the heterogeneity of the particular resource is limited. Consequently, the variety of the output of the loom is severely constrained when this type of intermediation is applied.

However, most fabric buyers also demand customised offerings which require some kind of adaptations in relation to the individual buyer. Figure 10 exemplifies such a situation when a customer requests a customized offering.

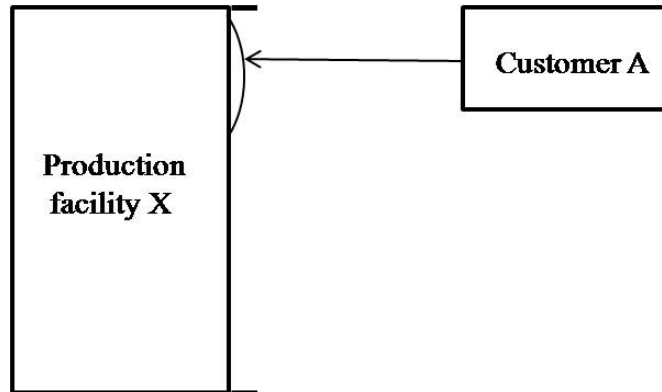


Figure 10. Customised offering and its exploitation of a resource.

In Figure 10 customer A orders an individualised pattern fabric (for instance a striped fabric), for which A has exclusive rights. In such situations the weaver cannot benefit from combining orders of fabric from different customers which means that economies of scale suffer. Sometimes the weaver chooses to produce more fabric than is ordered, thus speculating that the same customer in the future will buy more of this specific fabric. This approach contains a risk of being left with obsolete fabric which has to be balanced against the benefits of avoiding a costly set-up if a second order of that fabric is received. Since the design of the fabric is exclusive in relation to this buyer, the fabric cannot be sold to any other customer. Nevertheless, even if the weaver produces some surplus, seldom are orders of customer specific fabric so large that they fill up the whole capacity of the loom. Consequently, the benefits of customer-specific fabrics are traded off against reduced economies of scale.

The demands from the resources on the customer side thus impact on the conditions for intermediating. The greater the heterogeneity in the exploitation of a resource - the lower will be the economies of scale. On the other hand considerable value is generated since the loom is used to provide various buyers with fabric satisfying their individual demands. However, these adaptations tend to prolong lead times since the set-up of customised fabric is not only costly, but also takes time. The weaver's efforts to utilise its resources in the most cost efficient way requires considerable planning in order to balance requirements for cost efficiency and individualisation. Therefore, all changes affecting these plans in terms of batch sizes and due dates will hamper the resource utilization of the weaver's facilities.

The way that customer orders exploit a specific resource affects the other resources to which it is connected. The consequences of a customer's utilisation of the capacity and capability of a loom impacts on other customers as argued above, but also on the resources on the supply side of the loom (Figure 11).

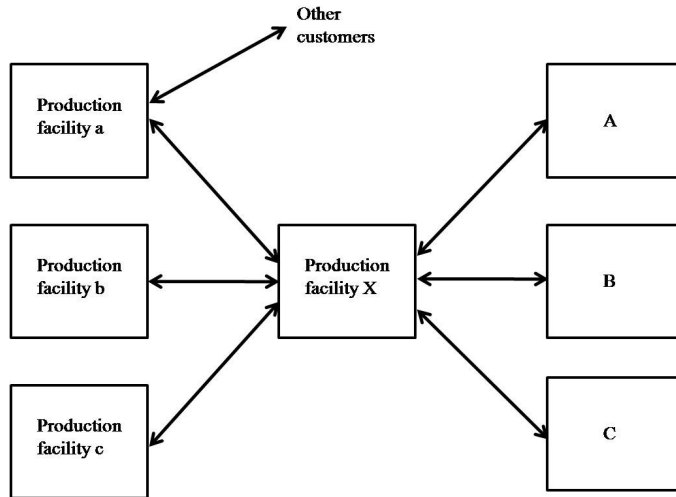


Figure 11. Interfaces between a loom and connected resources.

For instance, the operations in the resource used by A may require greige fabric that later on in the finishing process is coloured blue. The operations in the resources of B also need greige fabric, but in addition red fabric. Customer C on the other hand orders a striped fabric with a specific design limited to that customer. All these types of fabric can be produced in the loom, and they can be obtained in different volumes. However, the requirements of A and B are partly overlapping since both of them need greige fabric. Consequently, these orders will be combined and produced at the same time in order to exploit the loom better in terms of producing a larger volume of fabric. The order from customer C is not possible to combine with the others.

On the supply side, yarn is produced by production facility a (a spinning mill producing greige yarn), production facility b (red yarn) and production facility c (yarns in different colours in order to make a striped fabric). However, this current role of intermediation associated with the loom might be changed. If customer B is convinced to buy greige fabric that is coloured red in the finishing process, the economies of scale in the operations of the loom would be enhanced. Moreover, it would not be necessary to supply the loom with red yarn. This change in requirements from customer B would not only affect the exploitation of the loom but also increase the similarity in spinning since the weaver now can rely on greige yarn and thus improve economies of scale in production facility a.

The analysis of the resource layer clearly shows the significant role of intermediation for the exploitation of the resources along the activity chain. Resources are combined in different ways in order to balance the exploitation of heterogeneity and the economic utilization of the capacity of a resource.

ANALYSIS OF ACTOR INTERMEDIATION

In terms of the actor layer one of the main issues in relation to intermediation concerns the position of the individual actor in the activity and resource layers, i.e. the question regarding what activities are undertaken internally and what resources are controlled through ownership. The two activity chains ending in SM showed great variation in this respect.

In one of the activity chains spinning-weaving-finishing (and dyeing) were integrated within the boundaries of company A, which thus also controlled the resources used in the undertaking of the activities. Consequently, both activity coordination and resource combining are internal issues. Since input requirements and optimum capacity of the three facilities differ, company A buys yarn from other suppliers, and is involved in weaving for external customers in order to balance its capacity utilisation. Vertically integrated companies such as A normally have problems in being at the cutting edge in all the areas of technology that are critical to their operations. Problems may appear also when investments in new facilities are required, since textiles is such a capital intensive industry.

In the other activity chain, spinning-weaving-finishing are undertaken by three different firms, implying that balancing of volumes and capacity through this chain is not a main issue. Therefore, this chain is more flexible in terms of variation in the volume of business since all these firms have a large number of business partners. Moreover, specialised firms are in better position to be at the fore of the specific technology applied in their operations. On the other hand, the combined activities of the three actors in this complex activity structure need coordination. As the case shows this coordination calls for substantial interaction between the three, and also the active involvement of the converter C, who is the actual supplier of SM.

The case also illustrates the importance of actor interaction for the effective utilisation of resources. For example, open dialogue between the weaver and a buyer of fabric concerning economic consequences of the operations in the loom may make the buyer adapt its demand to better fit with the technical features of the facility and the demands of other customers. Through such interaction it may be possible for the supplier also to make room for individualisation by directing the customer demand towards requirements implying only minor negative impact on the exploitation of the particular resource. If the scope of interaction is extended to involve direct dialogue between several users of the facility even better conditions may be created. A group of customers may come up with joint plans for improved exploitation of a specific facility in order to balance economies of scale with opportunities for variation.

In the framework we also argued that any firm can be interpreted as an intermediary. The study shows that this perspective is a relevant one. The weaving firm W may be seen as an intermediary since it combines the requirements of a number of buyers in order to exploit the loom in the most efficient way, which also impacts on the resources of spinning mills. Company A connects the heterogeneity of cotton resources with what is needed in the sewing facilities of SM in order to respond to heterogeneity in demand from retailers and consumers. Neither W nor A would normally be considered intermediaries, but as shown in the case they are heavily involved in intermediation. However, our main illustration in this respect is SM. In the case description we concluded that this company is 'situated between two very different contexts', illustrated by Figure 12.

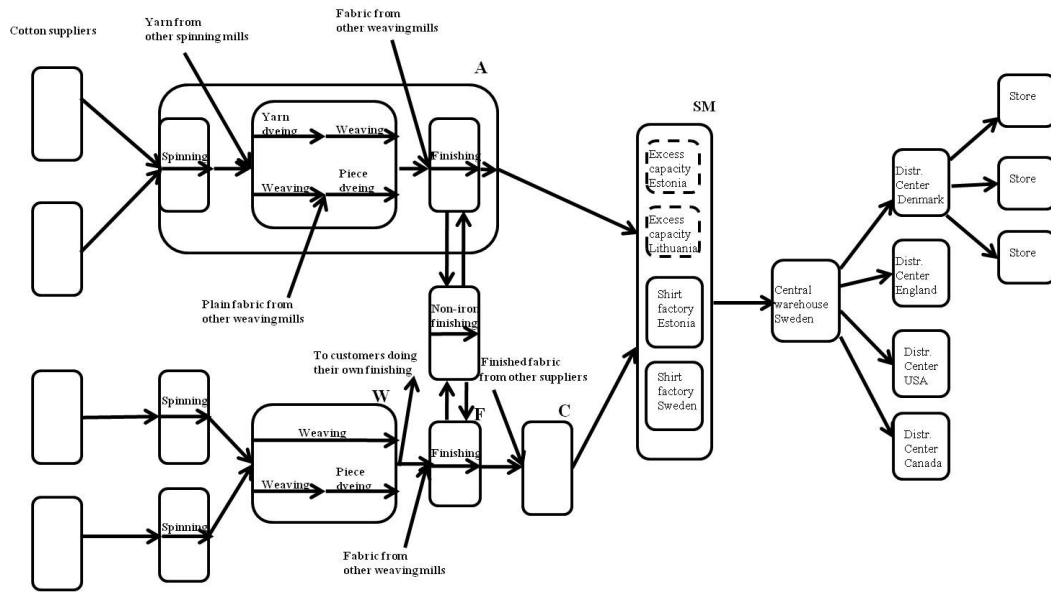


Figure 12. SM as an intermediary between its demand side and supply side.

The intermediation challenge for SM is thus to balance the flexibility requirements on its demand side with the call for stability in the operations on its supply side. As shown in the case description this balancing is achieved through an intricate interplay between physical and organizational resources. Physical resources in terms of flexible manufacturing equipment and buffering inventories are combined with organizational resources in terms of planning systems, methods for order differentiation and established business relationships, in order to connect demand and supply as effectively as possible.

The analysis also explains why suppliers are reluctant to adhere to the request of the CEO of SM about greater flexibility in dealing with changes in their preliminary orders. The possibilities for a company running a production facility to adapt to changing requirements from a particular customer is affected by the way in which these changes impacts on the utilization of the specific facility. Owing to long lead times, severe problems will appear if the detailed planning of the utilization of a resource have to be changed. Consequently, even though SM is perceived to be an important customer, the volumes of fabric demanded by SM represent a small share of the capacity of the facilities for weaving and finishing. Therefore, adjustments to changing requirements of SM regarding batch sizes and due dates, would affect the efficiency of the operations in these facilities considerably, and in turn increase the costs for all buyers of fabric, including SM.

CONCLUDING DISCUSSION

The aim of this paper is to explore the changing role of intermediation. In the introduction we claimed that significant changes in the business reality make previous interpretations of intermediation and intermediaries less relevant than they were in the past. For example, the border between production and distribution has become blurred since activities we used to call manufacturing nowadays are undertaken in what we used to identify as a distribution system. Moreover, the increasing attention to outsourcing makes intermediation an issue in relation not only to exchange of finished products, but also for manufacturing operations where the activities and resources of specialized firms need to be connected.

These changes have emphasized the role of form utility as a supplement to previous focus on time and place utility. Analysis of the generation of form utility requires the involvement of the resource and activity layers of the network in addition to the previous focus on actor interconnection.

The study shows that this broadened scope on intermediation contributes to improved understanding of current conditions in the industrial reality. In the activity analysis we illustrate how the way a specific activity intermediates between two others impact on their similarity, complementarity and performance. For example, one activity may balance the call for standardisation of a preceding activity with the requirements for customisation of a proceeding one. In this way yarn dyeing provides other conditions for spinning and weaving than piece dyeing and both have their particular implications for activities further downstream. Concerning the resource layer we show that the way a particular resource intermediates between two others has profound implications for the performance of the two and for entire resource constellations. The capacity utilization and exploitation of heterogeneity of any resource is dependent on its intermediation with other resources. Once the focus of intermediation shifts from efficiency in exchange of finished products to value generation and form utility, resource issues become apparent. The features of physical resources and the skills and capabilities inherent in organisational resources provide their specific conditions for intermediation.

The above conditions concerning the impact of the activity and resource layers seem to be valid for intermediation in general. Sophisticated physical resources and advanced organisational skills and how they are combined impact significantly on resource intermediation. These changes in turn affect the opportunities for the efficient undertaking of individual activities and pave the way for changes in their intermediation. For example, technical development in manufacturing and logistics provide opportunities for reconfiguring of activity patterns. These changes in turn impacts on the intermediation in the actor layer, for example, in terms of enhanced specialisation and, consequently, outsourcing.

The main conclusion of this study is therefore that in the business reality of today the understanding of intermediation as the process of bringing together heterogeneous supply and heterogeneous demand is enhanced if the analysis of actor intermediation is supplemented with analysis of intermediation in the activity and resource layers. However, in relation to this conclusion it is important to clarify that the call for enhanced attention to intermediation in the activity and resource layers is not due to changes in the actual occurrence of intermediation in these two layers. Intermediation in these respects has always been critical to business performance and historically it was considered so important that it had to be controlled within the ownership boundary of the company. This is exemplified by the vertically integrated hierarchy that for long time was perceived the company ideal and the main source of business performance. As is shown in Figures 5 and 6 there is no differential in the intermediation of activities and resources in the spinning-weaving-finishing arrangements in the two supply networks of our focal company. Irrespective of whether the arrangement is integrated within one firm (Figure 5) or allocated to different companies (Figure 6) the resource and activity layers share the same characteristics. The main difference is related to intermediation in the actor layer. In the first situation intermediation takes place within one company while in the second case intermediation of activities and resources cross ownership boundaries. Since business reality in general has shifted towards the conditions of the second situation the analysis of intermediation in the activity and resource layers have become increasingly significant.

The above discussion is primarily a claim for the relevance of considering intermediation in a broader perspective than what is common. However, also with respect to the traditional interpretation of intermediation as a means of efficient exchange processes of finished products an extension of its scope is required. A traditional intermediary tends to be involved in a broad range of distribution functions, for example it is claimed that the typical industrial distributor “contacts customers and makes the product available by providing necessary supporting services such as delivery, credit, technical advice, repair service, assembly and promotion” (Herbig and O’Hara, 1994:199). It goes without saying that it is difficult for one and the same company to maintain and improve facilities, equipment and skills in so many different areas of competence. Especially when technological development makes new opportunities available the conditions for the efficient undertaking of these functions change dramatically and so do the prerequisites for intermediation. Within the domain of the distributor above, resource development in information technology and logistics operations have provided opportunities for new forms of intermediation and new types of intermediaries. One example is the entrance of third-party logistics service providers that through sophisticated equipment and skills in logistics planning are able to outperform traditional distributors (Selviaradis and Spring, 2007; Marasco, 2008) mainly through new means of intermediation. Other firms focus on information exchange and contribute with intermediation of information processes (Walters, 2008; Agatz et al., 2008). Thus, also with regard to exchange it is crucial to take a broader perspective of intermediation since both activities and resources nowadays are allocated to different actors while they in the past were often integrated within the ownership boundary of a distributor and thus intermediated internally.

The second conclusion of our exploration is that current changes of the business reality make intermediation among actors increasingly important since resource combining and activity interdependence cross the boundaries of firms. When companies specialise in their activities and increasingly rely on access to the resources of others, intermediation has to be on the top of the management agenda. Piore (1992:442) explains this interplay in claiming that the outcome from the specialised activities of individual firms must be “re-assimilated into a cognitive form where they have economic meaning”. This means that for the end-user it is not the efficiency of individual activities that is the main concern – it is the value of the total solution provided by this specialised structure. On this basis Piore (1992) claims that specialisation anywhere in an industrial system will require integration elsewhere in this system. In our view this integration is based on intermediation in the three network layers. Our analysis shows that various forms of intermediation have their particular consequences for efficiency and effectiveness. The conditions for intermediation are affected by changes in the business reality which makes intermediation a dynamic issue. Similar conclusions are drawn by Bitran et al., (2007) who found that a particular form of intermediation is dissolved owing to changing conditions and then replaced by another form.

Finally, the changing role of intermediation impacts on what actors are considered intermediaries. Mainstream distribution literature identifies intermediation with specific firms involved in exchange of finished products. In today’s business reality all firms are involved in intermediation through their connections to a multitude of business partners and their activities and resources. In this respect we agree with Ford et al. (2003) in the claim that from an industrial network viewpoint every actor is an intermediary.

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