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eTransformation in Supply Chain Perspective

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Abstract

The purpose of the research program of SEMP (Scenter for E- Marketing and Procurement at the Eindhoven University of Technology, The Netherlands) is to gain insight into the effects and opportunities of electronic tools in procurement and marketing. It is believed that using these tools affects relationships between organisations in sales and purchasing situations. One of the research areas in this domain is the effect of e-procurement in dyadic relations.

Within the context of this research area the following research question is addressed: What is the effect of e-procurement on the suppliers and buyers relationship in a supply chain? The question is dealt with in both mono and duocentric organisations.

E-business is becoming a normalised instrument in improving cost efficiency and effectiveness in both (B2B) sales and procurement processes. By simplifying the chain as a set of dyads, one can clearly see that the supplier perspective and the buyer perspective coincide. Efforts for e-transformation from a buyer perspective might not be beneficial from a supplier perspective. For instance, e-procurement as a driver for spend-control always leads to reduced relationship-building activities from the supplier's point of view. On the other hand, e-procurement can also be intended to support purchasing and relationship processes, for example for strategic products and services. The supplier does not necessarily want to engage in this more relation oriented approach.

This paper positions the idea that dyadic SCM confrontation with CRM can give insights into the effects of e-tools on supplier and buyer relationships in B2B context. By analysing the e-transformation in a supply chain perspective the applicability of e-tools can be assessed. The interaction model is proposed and buyer e-transformation initiatives (e-procurement tools) are described from a buyer and supplier (dyadic) perspective in B2B environment.

1. Introduction & Context

E-procurement has passed trough its typical developmental economical stages. Presently it is becoming a normalised instrument in improving cost efficiency end effectiveness in (B2B) sales and procurement processes. E-transformation, the corresponding change of processes and the supply chain, can be can be dealt with from a supplier and buyer perspective. It contributes to the transformation in dyadic relationship (supplier-buyer) in three ways:

- Transformation: turnover boost, spend control versus process control
- The valuation of e-procurement by the supplier
- The valuation of e-sales by the buyer

In order to address these issues in the research of the Scenter for E-Marketing and Procurement (SEMP), the chain is simplified into a set of dyads. Reviewing the dyad, one will recognise both sides of the coin: the supplier wants to increase sales (or margin) according to his relationship management programmes and the buyer wants to buy according his present purchasing formulas.

As metaphor for the supplier perspective a common Customer Relationship Management (CRM) pyramid (Curry & Curry, 2000) is used. This pyramid indicates that twenty percent of the customer base contributes to eighty percent of the margin of the selling company. Fifty percent of the customer base is related to only five percent of the margin, and therefore probably not compensating the cost incurred.

As a metaphor for the purchasing perspective the widely adopted Kraljic matrix (1983) is used, realising that it does not serve dynamic purchasing situations (Santema, 2002, Gelderman & Van Weele, 2002). The advantage of using Kraljic's matrix is the widespread knowledge of the model.

The two metaphors can be matched in an Interaction Model, depicting twelve possible interactions between buyer and seller perspectives. Every interaction results in different implications for relationships and the transformation trough e-business.

Combining the supplier and purchasing perspectives, spend-control of the buyer is directly related to the turnover (and margin) of the supplier. E-business as a driver for spend-control (for the customer) will decrease the attractiveness of the buyer (from CRM perspective) and thus reduce the power position of the buyer. In this way, spend control always leads to reduced relationship building activities from the supplier's view.

E-business tools can also focus on the processes required for a certain purchased product (e.g. ordering processes for routine products). If processes can be simplified and/or reduced through e-business, cost control might lead to better profitability of a buyer. This could result in a more relation oriented approach from the perspective of the supplier, while reducing the total costs for the buyer. Obviously, achieving these results heavily depends on context specific situations (Sanchez, 2002).

Context of the Research and the Objective of this Paper

The purpose of the research program of SEMP is to gain insight into the transformation effects and opportunities of Electronic Tools in Procurement and Marketing. It is believed that using these tools affects relationships between organisations in sales and purchasing situations. One of the research areas in this domain is the effect of e-procurement in dyadic relations.

Within the context of this research area the following research question is addressed: What is the effect of e-procurement on the relationship between suppliers and buyers in a supply chain? The question is dealt with in both mono and duocentric organisations.

This paper positions the idea that e-tools affect supplier and buyer relationships in B2B context. This can be called e-transformation. The differences in mono- and duocentric approaches are dealt with, followed by the description of the supplier and buyer perspectives. Using the confrontation of these two perspectives, it becomes clear that not all relations are affected by e-procurement. For those that are, it can result in either better or worse relationships. The confrontation of supplier and buyer perspective can be depicted in an interaction model. Next, the buyer initiatives for e-transformation (e-procurement tools) in the different interaction situations are described from a buyer and supplier perspective. The paper concludes with limitations and some remarks for future research.

2. Mono and Duocentric Organisations

Williamson (1975, 1985) argues that organisations exist in order to reduce negotiation with regard to transactions and reduce the monitoring afterwards. Thus, organisations decide to either produce goods and services internally (hierarchies) or buy them on the market (markets). Williamson (1985) positions organisations in competition with the environment. All profits that are not made within an organisation are generated by other organisations. He uses the word opportunism to describe the management principle of choosing between markets and hierarchies.

Organisations are part of a supply chain. Ballou et al. (2000) define the supply chain as "all those activities associated with the transformation and flow of goods and services, including the attendant information flows, from the sources of raw materials to end users". Lambert et al. (1998) and Kothandaraman & Wilson (2001) describe the changes in paradigms of modern business marketing. According to them individual firms are no longer entities on their own, but play a role in a supply chain and work accordingly. In industrial marketing, the concept of a dyad—a relationship between one buyer and one supplier plays an important role.

Supply chains are flow oriented and take the goods or services floating in the chain as a central reference point. Each company in the chain contributes to that flow. If the contribution adds value (from a buyer's point of view, Santema & Rijt, 2003b), the company will profit from participation in the chain. As long as management philosophies (and literature) are focussed on the role (and profit making opportunities) of their company, real value chains will not exist (as opposed to supply chains). The power will remain in the markets and power will position companies with respect to each other. E-tools (both for sales or procurement purposes) are used to improve one's power position and improve profit, regardless of the effect on other parties. We call this the 'monocentric' approach to the use of e-tools: one's company placed in the centre of the chain and all other parties are seen as either a contribution or competition to the company's profits. In procurement, spend-control is typically monocentric by nature. Process control for both sales and procurement is monocentric when it only results in the improvement of internal processes by applying e-business tools.

Contrary to this, the duocentric approach of e-tools has emerged. The limitations of a monocentric approach are partly resolved by focussing on sharing and mutual benefits. This means that companies are comparing their processes and are looking for transformation possibilities of inter-company integration. The term Business to Business

Integration (B2B-i) stands for the (electronic) integration of two ERP systems of two independent companies, thus becoming more dependent (lock-in effect). This B2B integration is profitable for those companies that already depend on each other and that can afford the investments that have to be made in EDI. Web enabled B2B integration reduces the implementation costs, but still will need a conceivable investment.

Ramsey (2001) argues that companies do not want to outsource their core activities. This implies that it is not possible to engage in duocentric e-relationships for the core business. Mariotti & Sgobbi (2001) argue that the relationship between suppliers and buyers also depends on the information sensitivity of the markets in which they operate. E-business can help to influence this sensitivity and the balance between markets and hierarchies.

For the research into the transformation effects of e-tools we use the following categories of goals for using e-tools:

From a purchasing (procurement) perspective:

- Monocentric spend-control approach: focus on the reduction of costs of goods or services purchased, no matter what the effects are on other parties in the chain.
- Monocentric process control approach: focus on the reduction of costs of purchasing processes, no matter what the effects are on other parties in the chain.

From a sales perspective:

- Monocentric turnover orientation: focus on increasing the turnover of goods or services, no matter what the effects are on other parties in the chain.
- Monocentric process control approach: focus on the reduction of costs of (internal) sales processes, no matter what the effects are on other parties in the chain.

From a combined sales and purchasing perspective:

- Duocentric process control approach: focus on the reduction of costs of intercompany processes (both sales and purchasing), taking the effects of e-tools on the other party in the chain into account.

In the following sections, the typical monocentric instruments of customer relationship management (CRM) and supply chain management (SCM) will be described. Afterwards, these perspectives are integrated and every interaction is described from a supplier's viewpoint.

3. The CRM Approach: Customer Pyramid

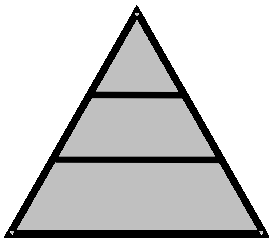
E-tools help firms to identify and exploit their position with their buyers. Araujo et al. (1999) conclude that, from the perspective of the buyer, interfaces with suppliers should be carefully differentiated. Just as purchasing departments are rationalising their purchasing process, sales organisations should rationalise their sales process. Sales organisations should, from their own perspective, manage different interfaces with different types of customers (or customer groups).

Many companies are still pursuing high sales volume, instead of high income. Managers pay little attention to account profitability, selection and management. Research into the manager's perception of relationship value, shows that intuition is more important than rational measures, like profitability (Blois, 1999). E-tools could have a massive effect on

the balance between intuition and rational reasoning as the objective information increases. However, managers are still essential to interpret and use this information.

Turnbull et al. (1996) extend the concept of relationship value and state that too little attention is being paid to the value of relations in networks.

In our research we use the customer pyramid as a metaphor for the CRM approach. It helps suppliers to identify the relative importance of their customers and act accordingly. The customer pyramid (Curry & Curry, 2000) indicates there are more and less important customers in terms of revue generation. The customer pyramid is shown in Figure 1.



Customers	Number	Revenue	Selling cost	Profitable
	20%	80%	20%	yes
	30%	15%	30%	?
	50%	5%	50%	no

Figure 1: *The Customer Pyramid (without Category Prospects)*

Based on the Pareto principle, the pyramid indicates that 20% of the customers represents 80% of the revenue and incurs only 20% of the selling cost. Therefore these customers are profitable in terms of margins. On the contrary, small customers (50% of the customer base) are attached to a large portion of the costs and therefore might not be valuable at all. Improvement schemes have the objective to move customers up the pyramid. If small customers have no growth potential, they should not be served any more. Efforts to try to change their purchasing pattern and have them buy somewhere else could be attempted. Prospects are dealt with separately as they do have growth potential.

The Life Time Value (LTV) concept of the customer can be used to identify the potential of a customer and thus guide the approach of these customers. In addition, the LTV concept could be used instead of revenue to position customers in a pyramid. Hoekstra & Huizingh (1999) define LTV as "the total value of direct contributions (transactions) and indirect contributions (e.g., recommendations, new product ideas) to overhead and profit of an individual customer during the entire customer life cycle, that is from the start of the relationship until its projected ending". While Anderson & Narus (1998) take a more monetary driven approach, Hoekstra & Huizingh (1999) extend the definition of LTV beyond just monetary terms. This means that a small customer in direct monetary terms, yet a large contributor to indirect revenues or profits, could be a big customer in our customer pyramid.

Research from Alsem & Hoekstra (1998) on 484 Dutch firms shows that 55,8% of marketing plans is directed towards a stable growth in sales. The percentage of the plans aiming towards profitable sales remains unclear. In many cases turnover is raised, yet profits decline due to the costs spent in gaining these customers. For the shareholder value of the firm, it is important that a sales organisation does not want to achieve maximum turnover, but a maximum expected future cash flow. Many companies treat their small customers in the same way as they treat their biggest customers in an attempt to strive for high customer service. This could result in unprofitable customers. Companies should prioritise customers on profit potential and treat them accordingly. This also means that some customers should not be served at all. Sheth and Sharma

(1997) call this customer selectivity: “the consequence of customer selectivity will manifest itself into better customers getting better offerings than marginal customers”. They even foresee that the (duocentric) relationhip between a supplier and a customer can be a competitive advantage. The customer selectivity may lead to a decline in turnover, but the net effect on the profit might still be positive by using e-tools that make a reduction in the costs of serving a customer possible. Naturally, one should bear in mind that investments in equipment and people are required to achieve process advantages.

This rationalisation of the customers might make the sales force more effective. According to Hise & Reid (1994) studies on the sales force show that only 35% of the time of sales representatives is dedicated to face-to-face contacts. The remaining time is spent on travelling, administration, etc. They give examples of alternative ways for organisations to serve their customers. E-business could make the non face-to-face time of sales representatives more efficient.

On the other hand, e-business could reduce the costs of interaction, resulting in lower costs per customer contact. This makes serving small customers more feasible, bearing in mind that the differences in cost per interaction should compensate for the investments that have to be made in e-tools in terms of hard and software, and organisational transformation.

The e-tools that can typically be found in each category of the customer pyramid are shown in Figure 2.

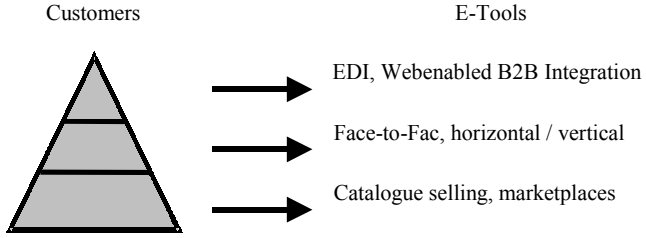


Figure 2: *E-tools in the Customer Pyramid*

4. The SCM Approach: Purchasing Portfolio

There are many purchasing models in literature (Campbell, 1985; De Boer et al., 2001; Faris et al. 1967; Olsen & Ellram, 1997; Spekman, 1998; Virolainen, 1998). Central in these purchasing models is a differentiation of suppliers. Organisations adapt their purchasing behaviour accordingly. For our research purposes, we use the purchasing portfolio model introduced by Kraljic (1983) as a metaphor for purchasing behaviour. The model consists of two dimensions: the financial risk (or profit impact) and the complexity of supply (purchasing risk). Both can be either ‘low’ or ‘high’, thus creating a two-by-two model with the segments: routine, leverage, strategic, and bottleneck products. The purchasing portfolio is shown in Figure 2.

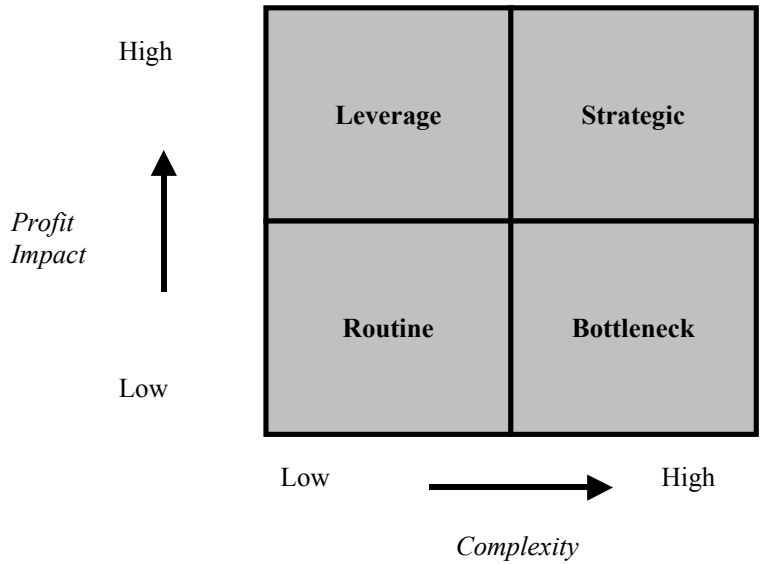


Figure 3: *The Purchasing Portfolio (Kraljic, 1983)*

A low complexity of supply can be caused by a reasonable amount of alternative suppliers. This means by the way, a reasonable competitive situation from supplier perspective. On the other hand, high product specificity or only a limited amount of suppliers could raise the supply risk. The profit impact of the same products can differ per organisation. For instance, computers could be expensive for one firm, while another firm could see these as marginal costs. In general, investments and production goods will have a higher profit impact than non-production relates products.

From a purchasing perspective, every segment has a different goal and application of e-tools. For the routine segment, the typical goal for the use of e-tools is to reduce the cost of the purchasing processes. High purchasing costs are caused by the high processing costs as compared to the product price. This segment could also be called the Ariba or Commerce-one segment since these are the major firms targeting these products and services for their e-procurement software. The type of e-tools or e-procurement that can be found in this segment are marketplaces and catalogue buying.

In the leverage segment, the reduction of product prices is the typical goal of using e-procurement instruments (as often for all other instruments). Auctions are the most common instrument to achieve this goal. Here, suppliers are invited to an on-line bidding process, where the price goes down in a reverse auction mechanism. In several cases, specific to the category of goods, a significant price reduction can be achieved. Another possible instruments in this segment are the marketplaces.

Establishing or developing relationships with suppliers is often the objective for the strategic segment. E-procurement could contribute to simplifying or enabling the relationship. B2B integration (B2Bi) and web-enabled integration are typical examples of e-procurement tools found in the strategic product segment.

For bottleneck products the supply security is essential. In this case, e-procurement is used for the supply processes and not for purchasing activities. Track and trace applications have an added value in this respect, because internal operations know where the critical parts are in the supply chain. The customers are able to see what the status of a purchase order is and when the products or services can be expected.

Typical e-procurement goals and examples are shown in figure 4.

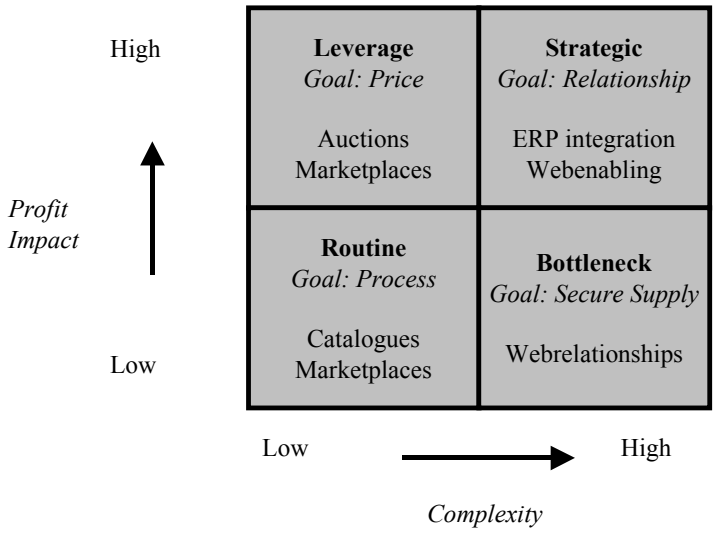


Figure 4: *E-Procurement Goals and Examples*

E-procurement can influence the position on the complexity axis when a company uses e-tools to enlarge the scope of the supply market. The profit is influenced when the price of the goods or services is significantly reduced. This might be the case for leverage products.

The purchasing portfolio of Kraljic is originally not a dynamic model: products cannot "move" within the portfolio (Santema, 2002). Moreover, the matrix does not take the purchasing process into account. If we do so, e-tools largely affect the routine segment, where the process cost are the highest in relation to the price of the product. If ordering processes are taken into account, products are then defined as "augmented products" (Kotler, 2001).

5. Combining CRM and SCM Perspectives

Matching the supplier and buyer perspectives is important to determine the characteristics of the interaction and consequently the way a relationship could be established and in which e-tools apply. For example, the interaction between the supplier and a Fortune 500 company buying staples leads to different requirements to relationship and e-tools. The Fortune 500 company will be in the top of the customer pyramid. Therefore, the staples supplier would like to strengthen its relationship with this customer, as it is so important for him. However, the staples are not an important product for the Fortune 500 company. In this case a supplier of a routine product is selling stables to one of its largest customers. The purchasing department of the Fortune 500 company will mainly focus its attention on other products, that results in financial benefits (e.g. to leverage products). Consequently, there could be a mismatch between the marketing behaviour of the staples supplier and the purchasing behaviour of the Fortune 500 company.

In the dyadic situation the supplier classifies his customers and the customer classifies his suppliers. This results into the following conceptual model of interactions in dyadic relationships. The model is shown in Figure 5. Twelve possible interaction relations between suppliers and customers are identified. For each relationship there is a corresponding strategy for the e-tools (Santema & Rijt, 2003a)

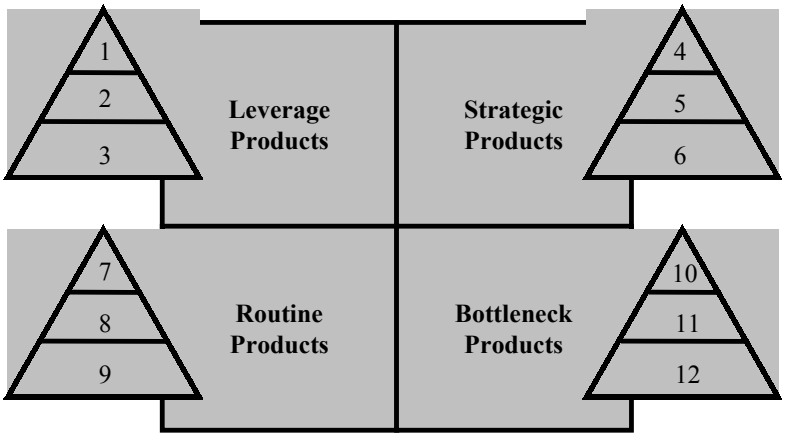


***Figure 5**: Interaction Model*

We have now dealt with the monocentric perspectives from buyer and supplier perspective and have identified twelve interaction relationships by combining these perspectives in a duocentric approach. Next, we will discuss the possible applications of e-procurement tools in the different interaction relationships.

6. Transformation Based on eProcurement Tools

In this section, the potential value of e-procurement tools is described from both buyer and supplier perspective. The categories are clustered according to the portfolio model (Kraljic, 1983) and the interactions are dealt with in the sequence of the numbering in the interaction model as given in Figure 5. Sub-conclusions are given for the transformation of each product category in three CRM perspectives.

A. Leverage products

For leverage products e-tools are used to make the supply situation more transparent or to facilitate bidding processes by means of reversed auctions. The costs of purchasing processes (including the processes of suppliers) are less than the costs of products of services, otherwise auctioning would have no benefit (in absolute terms). In this case, the e-tools primarily have a monocentric character, attempting to reduce the costs of products or services for the buyer. From the supplier perspective we make a distinction in top, mid and small clients.

1. Leverage products - Top clients

Selling leverage products (or services) to large customers could be problematic. Using e-procurement tools could cause a further shift in the power balance towards the customer. Consequently, the buyer (potentially) profits the most from the application of e-procurement tools in this situation. Traditionally, suppliers would find this situation less attractive, because the improved transparency of the supply market will enable customers to reduce prices. There are three potential value propositions for the supplier:

- Integrate the e-procurement information in the company's processes (ERP)
- Guarantee the lowest price to try to prevent the customer from using e-procurement tools
- Help the customer build the auction and change core business

All proposals are very costly and will reduce the profitability (e.g. based on Life Time Value approaches) of the large customer, potentially moving the customer into the mid or even small clients segment. In the long run, e-procurement might squeeze out too many suppliers. They will not benefit from e-tools in this situation.

2. Leverage products - Mid clients

In this interaction, the traditional behaviour of suppliers is relationship management. The supplier will attempt all kind of initiatives to attract the attention of the buyer. This results into costs that are passed on to the final price. This is an interesting paradox, because the supplier does not add value to the buyer by performing additional relationship-oriented activities, but the "added value" for the buyer is the low price. For these mid sized clients, the supplier should reduce its sales organisation, and follow the price reduction goal of the customer (e.g. by using auctioning tools). The supplier should be as efficient as possible. An example of e-business playing an important role is initiating an electronic marketplace, that facilitates the comparison of prices and formation of a 'continuous auction'. This might prevent customers to invest in auctions themselves.

Marketplaces can be founded by new entrants or intermediaries (organisations previously not active in the industry). They can build a marketplace to offer their own products, but also to offer the products from their traditional competitors.

Using e-tools will effect the position of the seller in the chain.

3. Leverage products - Small clients

Small clients should not be actively served at all, as a sales representative is too expensive to serve them. There are two ways to serve this customer segment: via the Internet and via resellers.

Customers could be profitable if they close the deal by taking the initiative and taking care of the whole administrative process themselves. In this case, the customer places his orders directly and the related task of the organisational back office of the supplier is limited.

The second option is to indirectly serve customers in this segment using resellers. Since resellers have a different scale, small customers could be big or medium sized customers for them. In addition, their organisation is better equiped to serve many small customers. The reseller could become a medium sized customer for the supplier.

E-procurement tools help the supplier to understand that small customers are less lucrative. The best remedy is to shift these customers to other segments.

The conclusion from a supplier perspective for buyers using e-tools (e-procurement) for leverage products is that it generally reduces the value of that buyer. This could result in the reduction of CRM activities. Only for large customers, suppliers might not have the luxury to follow this concept and they will be squeezed out. In the segment of leverage products e-procurement is mainly monocentric and beneficial for buyers. For the seller using marketplaces as a replacement for their own sales activities, it generates some value. This would require a large scale transformation of both the company as well as the chain.

B. Strategic products

Strategic products have a high financial risk and a high complexity for the customer. Purchasing activities are focussed on developing relationships with suppliers. E-tools should strengthen the relationship. Buyers are prepared to invest in Business to Business integration (B2B-i) of ERP systems. Three categories of customers are identified.

4. Strategic products - Top clients

When the product is a strategic product for the customer and the customer is important for the supplier there is mutual dependency. Both parties are willing to invest in the relationship. E-tools will enable both parties to easily benefit and further develop the relationship, thus, gaining operational efficiencies. Therefore, this interaction is duocentric by nature. Further advantages could be realised when both parties start to integrate their processes. Examples are known where integration of ERP programmes make both sales and purchasing activities redundant. This was also realised through EDI decades ago, but is now available for a larger number of relationships in the chain (as long as the customer buying strategic products is big for the supplier). Internet technology has reduced the required up-front investments. Web-enabled EDI facilitates the sales and purchasing process and can be beneficial to both supplier and buyer.

5. Strategic products - Mid clients

In this situation the supplier is not always interested in a durable partnership, depending on the costs of initiating and maintaining that relationship. E-tools might facilitate a partnership and reduce these costs. E-procurement should now focus on reducing the costs of the supply process (within the organisation of the supplier, as the power balance shifts towards the supplier). This causes an increase of profitability for the supplier. E-tools could facilitate the transformation process.

6. Strategic products - Small clients

There is a mis-match in the case of a small customer buying a strategic product. The customer wants a long term collaboration with his supplier. The supplier however, is not (or should not be) interested in this customer. A small customer is unprofitable, even in this (strategic) situation. E-procurement efforts attempted by the buyer are not enough to create a relationship in this situation. On the other hand, the transparency effect might help the customer to find a smaller supplier interested in building a duocentric relationship.

The conclusion for the supplier perspective on buyers applying e-procurement tools for strategic products is that for large customers e-procurement has the opportunity to enlarge the strategic fit. This is caused by the transformation of both buyer and seller systems. For small clients the (potential) benefit of e-tools lies in finding other (potential) suppliers. The benefits are both mono and duocentric.

C. Routine products

Routine products are readily available (low supply complexity) and have a low impact on the financial results of a company. The purchasing of routine products is mainly an administrative process. The organisational costs often exceed the costs of the goods bought. Professional purchasing departments try to minimise the effort and time they spend on the purchasing of these routine products (Van Weele, 1997). E-procurement tools focus on administrative cost reduction, striving to reduce the costs of internal and potentially duocentric processes. Professional suppliers try to minimise their customer's efforts by taking care of the purchasing; however, not for all their customers. Three categories of customers are identified.

7. Routine products - Top clients

In this case, the supplier is willing to invest in the transformation by e-tools (and has a big 'lock-in' opportunity). The supplier links his organisation to the administrative ordering processes of the routine products of the customers. Multinationals might use procurement systems like Ariba or Commerce One to streamline the purchasing of maintenance, repair and operating (MRO) goods and services. This interaction strategy is (at least for the moment) only applicable to very large customers, as e-tools still need large investments both in absolute money terms as in implementation effort.

An even more sophisticated way of serving the biggest customers is to take care of the full administrative process, including the replenishment process. In this case the supplier checks the inventory of the customer (preferably electronically).

More importantly, an investment of a single client does not necessarily lead to a lock-in effect. It might even lead to the opposite, since the investment is asset specific. It is worthless as soon as the customer does not want to use it and/or pay for it. In this paper the investment is dealt with in a duocentric way, meaning that it is beneficial to both parties.

8. Routine products - Mid clients

Mid-sized clients are often not large enough to justify the investments in e-tools (from both supplier's and buyer's perspectives). The absolute money terms are simply too high. Now using e-procurement will shift the administrative costs into investment cost, not necessarily being lower.

9. Routine products - Small clients

In this category, which encompasses the majority of the customers, any (initial) investment in e-tools will not be justifiable. The purchasing department should either initiate a catalogue buying system or outsource the procurement to a marketplace. The sales department should either simplify the process or outsource the sales to an intermediary. The latter could be supported by a marketplace (catalogue selling). This is the situation where e-tools might lead to so called re-intermediation: the transformation is really an outsourcing process (from both sides of the dyad). The e-tools facilitate a high level of standardisation (across several parties in the market) and thus combine purchasing power, in the sense that the administrative processes are optimised.

The conclusion from the supplier's perspective on buyers implementing e-tools for routine products is that it opens up an opportunity to facilitate the purchasing processes within customer organisation for large customers (insourcing). For mid clients the value is questionable. For small customers the suppliers should consider catalogue buying or outsourcing, leading to the usage of marketplaces for those customers that have integrated e-procurement tools. Transformation can be seen in either one of the parties or both of them. The benefits of using e-procurement tools are duocentric.

D. Bottleneck products

Bottleneck products are products with a low financial risk and a high complexity. Now the e-procurement focus is on reducing the complexity, either by looking into alternatives (using the increased transparency) or by simplifying the relationship with the supplier. Tracking and tracing is one of the specific e-tools that could have value here, since the supply security is the key issue for the customer. The supplier's perspective is dealt with from the same three CRM situations.

10. Bottleneck products - Top clients

Although the supplier has the greatest power in this relationship, a rational supplier will invest in facilitating the reduction of complexity for a large client by using e-tools. This will help prevent the customer from looking for substitutes. In addition, e-tools could facilitate customer integrated product development. The investment could be earned back through price increases (supplier) and by reducing the process costs (buyer).

11. Bottleneck products - Mid clients

Mid-sized clients of suppliers of bottleneck products have a difficult position. The traditional behaviour of the supplier can be described as "pull-behaviour". As the power lies with the supplier, he does not necessarily have to take good care of the customer's complexity. The customer however is interested in securing the supply. The customer will

benefit the most from e-tools and has to invest in process simplification. The supplier might adjust if the mid customers still have interesting margins.

12. Bottleneck products - Small clients

Small customers also would like their supply secured. However, it is not in the interest for the supplier to deal with these customers, because they are just not profitable. It is more efficient for the supplier to have these customers served by a third party. This could be an extra step in the supply chain. The adoption of e-tools in this interaction would implicate a transformation of the supply chain.

The conclusion from the supplier's perspective on customers using e-tools for bottleneck products is that it opens up the possibility of duocentric integration processes for large customers, for mid clients the value is questionable, and for small customers the suppliers should consider outsourcing. This will lead to usage of marketplaces for those customers that have integrated e-procurement tools. The benefits of using e-tools are duocentric.

7. Conclusions

Transformation can be valuable in from a mono and duocentric perspective in the following situations:

E-tools are valuable for buyers in a monocentric approach in two situations:

- Large customers buying leverage products. In this particular situation the supplier will not valuate the usage of e-tools by the customers. In general the value of that customer will diminish.
- Small customers buying strategic products. In this particular situation the supplier does not particularly care for the customers. The customers that do use e-tools might find smaller suppliers who are willing to serve them better. The transparency effect of e-tools serves both supplier and customer.

E-tools are valuable for sellers (suppliers) in a monocentric approach in two situations:

- Transfer (and transform) small customers (in general) to marketplaces.
- Shift towards process control for large customers buying routing and / or bottleneck products. Process control means taking over the processes of the customers and transforming the actual product into services and product. E-tools can make this transformation possible.

E-tools are valuable from a sales and a purchasing perspective (duocentric):

- In a dyad between a large customer buying strategic products or services. E-tools could facilitate the transformation (both want strategic a relationship)
- In a dyad where the customer is small. The use of e-tools might transform the supply chain in this case. We call this transformation process intermediation.

For all other relations between SCM and CRM philosophies, the use of e-tools is not directly assessable and not necessarily profitable for the buying or supplying organisation.

8. Limitations and Future Research

In this paper a dyadic aspect is introduced to the traditional monocentric approach of the e-tools. The confrontation of the perspectives of suppliers and buyers (interaction model) was used to valuate the transformation caused by the (potential) use of e-tools. The main focus was on buy-side initiatives. The duocentric approach opens a whole new area of discussion concerning the value of e-tools.

Limitations

The limitations to the dyadic approach with the interaction model as presented in this article are as follows:

- This article took a buyer and supplier perspective to discuss the value of buy-side initiatives of e-tools in certain interactions. Similarly, sell-side initiatives could also be valued. This could be a possible extension to this work.
- The twelve interactions that were found as a result from the confrontation from CRM and SRM perspective deal with B2B situations. In other situations, like B2C, other interaction characteristics might apply. A SEMP researcher has already studied the possibilities to use other metaphors for the buyer and seller perspective.
- As mentioned earlier, the Kraljic matrix (1983) is originally a static model. This also implies the dynamic limitation of the proposed interaction model. Several efforts have taken place to research dynamic aspects of the Kraljic model. This should also be considered for the interaction model.
- Some companies will only be active in one or several interactions. For instance, the example of the staple supplier is likely to always be a supplier of routine products. Further research might be needed to refine the e-tool strategy in these specific situations.
- Fitting a homogenous customer base onto a customer pyramid might be difficult. This could result in less interaction relationships. We exclude this possibility from our research.
- Possibilities of syndicate efforts for e-tools are not explored. In addition, the role of third parties as intermediaries is only briefly explored. This is a possibility for future research.
- Besides the step from a mono to a duocentric approach, a multi-duocentric or polycentric approach could be identified. These situations require several assessments of two perspectives or the assessment of more than two perspectives. This would require an extension of the interaction model.
- Several market or environmental constraints could limit the possible interactions. For instance, legislation could force companies to use a certain e-tool, which would not be the most recommendable from the interaction perspective. Adaptations could be made to the interaction model to make it suitable for these kinds of situations.
- Other factors could influence a decision to engage in an effort to implement e-tools than solely the interaction characteristics. For instance, the growth potential of a small client could lead to investing in a further development of a relationship. Another possibility, is the strategic importance for a company to adopt new technologies. For instance, a high-tech early adopter could have a promotional benefit. The proposed model does not include the e-tool decision

making process prior to the transformation. A possible extension could be researched.

9. Further Research

This paper is mainly based on literature and some evidence from practice. The planning is to extensively interview Benelux companies in their reasons for investing in e-tools, both within buying and supplying organisations. Besides the applicability of the e-tools, the transformation process will be studied.

Evidence for the above-mentioned typical SCM-CRM relationships and the usage of e-tools is anticipated to be found. Several cases have been explored where transformational effects could be identified from a duocentric perspective. In addition, two specific cases have been researched where the possible interaction relationships are limited by legislation or by the product offering of a firm.

With this article we hope to have opened the discussion about the applicability of e-tools in certain interaction relationships from a dyadic supply chain perspective. We welcome other researchers to join into this discussion and build on this proposed conceptual basis or explore related research issues. Overcoming the limitations mentioned above could be a good starting point.

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