

To share or not to share!

Successful collaboration in forecasting
and planning in the High Tech and
Electronics industry

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Successful collaboration in forecasting and planning in the High Tech and Electronics industry

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Our special recognition goes to the members of the EyeOn High
Tech & Electronics network. This white paper reflects the findings of
interviews with the 31 participating companies.

June 2007

An EyeOn white paper

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Management Summary

The High Tech and Electronics industry is a highly innovative sector with a volatile market demand and with very specific forecast and planning challenges. In previous EyeOn High Tech network studies the five most compelling topics have been identified. The topics have been identified by High Tech companies that are members of the EyeOn High Tech network for forecasting and planning.

Life cycle management and marketing and sales involvement with forecasting and planning have been discussed in previous EyeOn White Papers. This White Paper discusses collaboration in relation to forecasting and planning.

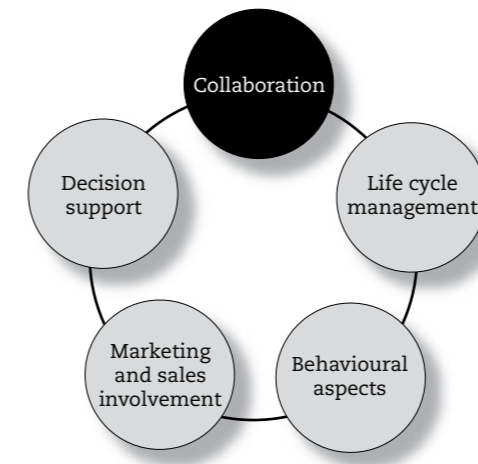


Figure 1: Forecasting and Planning topics

Collaboration in the supply chain is definitely on the supply chain managers' minds. Participating companies in the EyeOn network have indicated that the collaboration between companies in the forecasting and planning areas is of utmost importance when there is a mutual critical relation between the customer and the supplier. The fact that the criticality of the business relation between customer and supplier is often experienced as not equally divided causes the collaboration possibilities to be limited. Intensifying collaboration always requires bilateral strategic decisions and support. Without the strategic decision to intensely cooperate and vital management support going along with it, successful collaboration is doomed to fail. Some companies in the network cope with critical customers from their own perspective as suppliers. Some companies deal with critical suppliers from their perspective as customers. The criticality of the relation between customer and supplier highly qualifies the possible collaboration options and the chances of success or failure.

To get feedback on the collaboration topic from the High Tech industry interviews have been held with members of the High Tech network.

The interviews show that the criticality of the relation between customer and supplier depends on the role that is played. The

Participating companies in the High Tech network				
Equipment manufacturers	Component manufacturers	Distributors	Electronic Manufacturing Services (EMS)	OEM / telecom operators
ASML ASM International Assembleon Omron Stork Vanderlande Industries	Ferro Freescale Motorola Philips ST Microelectronics Thomson Tyco Electronics	Arrow Avnet	Flextronics Mediamotion Navteq Neways Solectron	Acer Apple Bosch Canon Europe Fujitsu Siemens KPN Mobile Lexmark Logitech Philips Vodafone

Table 1. Participating companies

arguments a supplier has to see the relation as critical are also seen by the customer. However, in the customer role there are many more aspects that make the relation a critical one.

The findings are primarily focused on the relation that is critical for both the customer and the supplier. The interview findings show that in this situation it is not obvious that the relation will stay critical in the future. For both parties it is essential that management decides to intensify the relation in order to make it a success. If one of the partners decides not to go that direction successful collaboration is doomed to fail. So first of all the management decision is the foundation to start collaboration relations. Secondly the internal readiness of both parties is of utmost importance; if one of the parties' internal readiness does not reach the minimum requirements, it becomes hard to build up a successful collaborative relationship.

Next to this, excellent operational execution is a factor that strongly influences the level of successful collaboration. The better the operational execution the more successful your intense collaboration can be. Trust is mentioned by almost every interviewee as an extremely important success factor. Trust is a difficult concept to operationalize especially for those dealing in supply chain management has no place in their natural vocabulary.

Innovation can be seen as the factor that brings companies together and keeps them together. An intense innovation relation will make collaboration in the forecast and planning area easier to establish.

Basic forms of collaboration in forecasting and planning in the High Tech industry

This White Paper is a result of interviews held during October 2006 among members of the EyeOn High Tech network. The goal was to determine the current status of collaboration in planning and forecasting in the High Tech industry and to identify success factors related to that.

In supply chain management collaboration is often short for collaborative planning. The approach chosen here is a broad one where collaborative planning is a specific form of collaboration.

The definition of collaboration used in this White Paper is:

Business processes wherein companies work together to achieve common goals
...with focus on forecast & planning and supply chain management aspects

How do companies work together?

A few forms can be identified that are used as basic forms on how collaboration in forecasting and planning is organized.

The most common forms are shown in figure 2. From the top down the supply chain control gets more complex and requires more from the partners in the supply chain. True collaborative planning is illustrated by the common supply chain control layer. In that case partners in the supply chain have organized a centralized decision making body that prevents suboptimal and local decision making.

The characteristics of the various basic forms are shown in table 2 (next page).

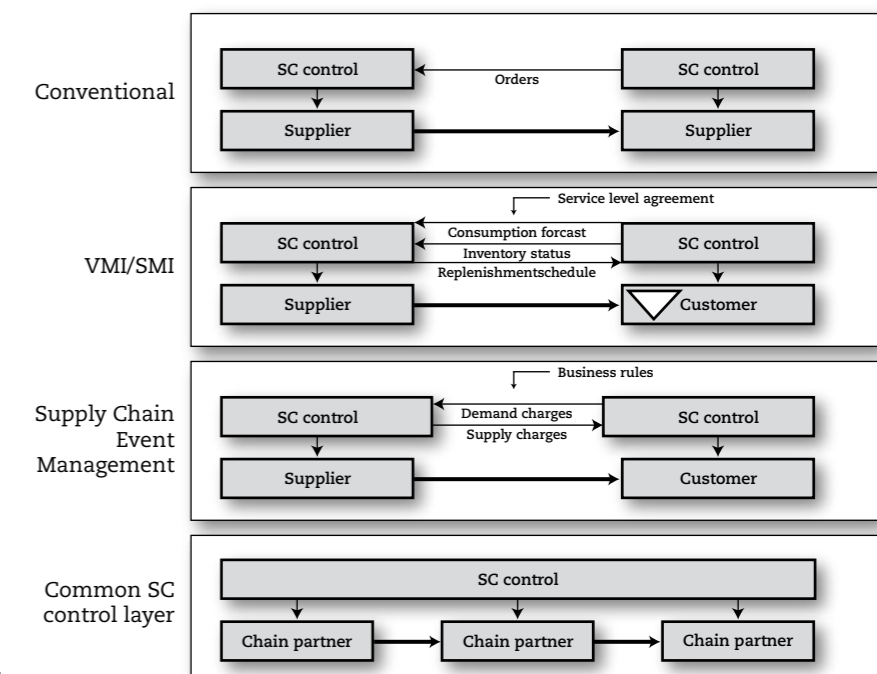


Figure 2: Basic collaboration forms

	Conventional Ordering	VMI/SMI/CMI	SC Event Mgt.	Common SC Control Layer
Planning focus	material	material	material/capacity	material/capacity
Decision making	distributed	distributed	distributed	centralised
Level of mutual supply chain visibility	low	moderate	high	very high
Complexity of liability sharing	low	moderate	high	very high
Complexity of material/capacity allocation to customers	low	moderate	high	very high
Required mutual investment in relationship	low	moderate	high	very high

Table 2: Basic collaboration forms and their characteristics

Awareness of complexity in High Tech industry

High Tech companies are very well aware that their environment has become much more complex from a forecast and planning perspective. It can therefore be expected that the question is raised whether collaborative planning would be an option to be considered, if it should be beneficial and what the factors would be that lead to successful implementation. These factors for successful collaboration will be elaborated on later. First of all it has been identified what the current level of collaboration is among the High Tech companies that participated in the EyeOn High Tech network interviews. The level of collaboration is explained by the collaboration index and is discussed in the next chapter.

Present level of collaboration in forecasting and planning in the High Tech industry

A good measure to help identify the level of collaboration in forecasting and planning is the “collaboration index” (Simatupang, Sridharan [2005]). This measure identifies to what extent a company is working together with the partner in forecasting and planning. This index is used as an important indicator of how the current collaboration relations are seen in the perspective of forecasting and planning.

quantities and order moments, priority settings and allocation of capacity alignment.

Incentive alignment

This aspect represents the level to which companies have agreements on sharing the costs and benefits of the collaborative relationship. Optimized inventory positions in the wider range of the supply chain might be positive for the supply chain as a whole but might also be considerably worse for one supply chain partner. The way the negative and positive aspects are fairly shared among the partners is expressed in the incentive alignment dimension.

Combining the collaboration index with the basic forms of collaboration shows the impact of intensified collaboration.

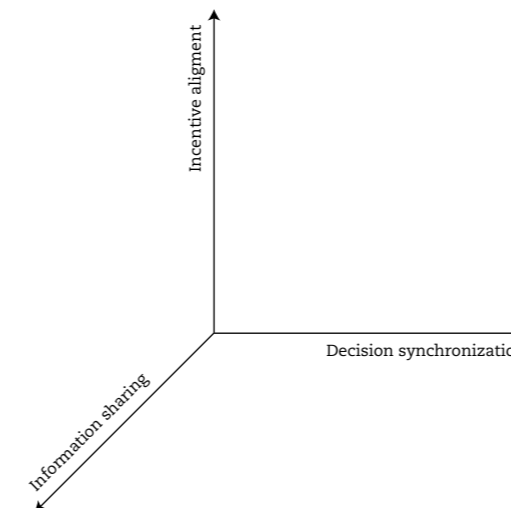


Figure 3: Collaboration index for forecasting and planning

The three important dimensions that identify the collaboration in forecasting and planning are:

Information sharing

This represents the level to which information is exchanged among the supply chain partners. This can be done in various forms, spoken words, hard copy reports, electronic documents or automated system interfaces.

Decision synchronization

This aspect represents the level to which the supply chain partners mutually decide on important aspects in their forecasting and planning relationship. The important aspects will reside in the area of production start-up quantities and moments, material ordering

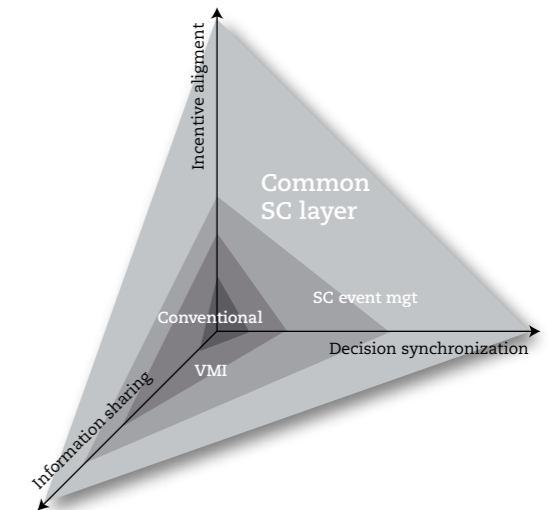


Figure 4: Collaboration form and index combined

Figure 4 shows the relationship between the collaboration index and the basic forms of collaboration.

The actual level of collaboration in forecasting and planning in the High Tech industry

The interview findings about the collaboration index are represented in the following figure.

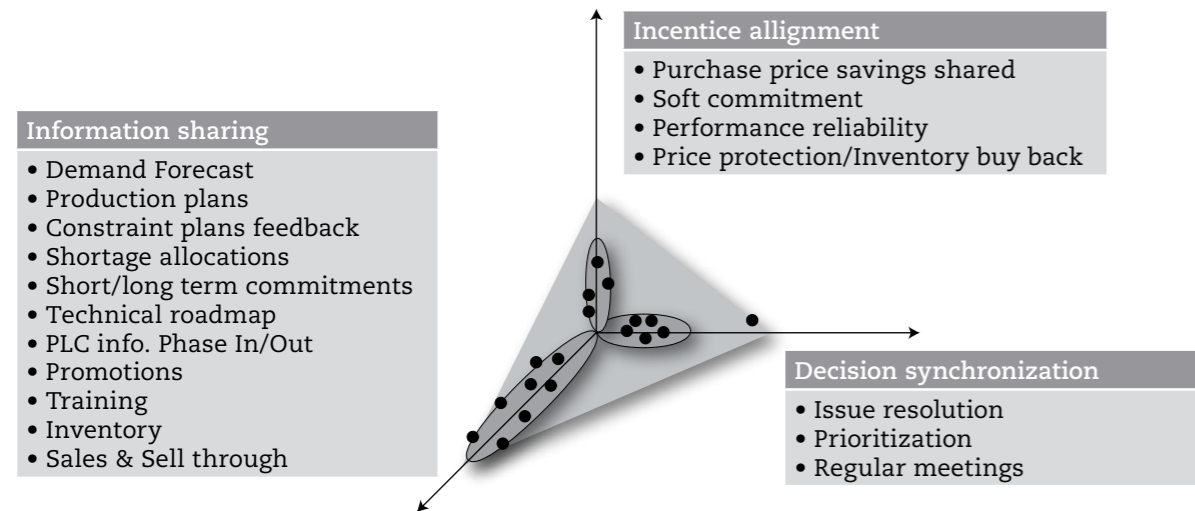


Figure 5: Collaboration index in High Tech industry

Information sharing

The findings show that most companies share a lot of data with their partners. There are some differences in the way the data is shared. The most popular way to communicate is by sending Excel by e-mail. Next to that automated ways of sharing inventory and forecast, actual sales and material order data are seen such as purchase orders and requisitions. It is also common to share information about product portfolios and product life cycles, although there are exceptions where this is not done or even forbidden for strategic reasons. Also promotion planning is often communicated.

A OEM manufacturer:

“one of our customer is willing to share enormous amounts of data, no problem at all, but is not willing to take time to discuss the data. In fact discussing the data transforms it into information and that provides the added value”

The question, however, is to what extent the data that is shared can be interpreted and transformed into valuable information that can be used for supply

chain decision. Often the data integrity and accuracy is not of a level that it is really helpful in running the business in a better way. Projects that target to improve the data quality and first of all reach a higher level of comprehension of the data shared, are found frequently.

Decision synchronization

True decision synchronization is rarely practised in the High Tech industry. In the real High Tech world decision synchronization is not commonly practised at all. It is a lot more common to have regular meetings with supply chain partners to discuss issues and to try to resolve operational hiccups.

Incentive alignment

True incentive alignment was not found in the High Tech network. There are quite some thoughts about it but it is not known how to create processes that provide the right benefits and costs to accomplish the right

A component manufacturer:

“We did set up contracts with liability agreements, however, the reality is that we never make use of these contracts. They are complex to apply and will disturb the good relationship that we have we have never used the contract”

targets. While not knowing and not having the experience of supporting real incentive alignment the incentive of the collaboration relationship is often expressed in soft values. It

is expected that intense collaboration will lead to a better performance of the supplier or a better behaviour of the customer. More stability and flexibility are generally seen as the benefits, whether these are equally shared is unknown.

Conclusion

The actual situation in the High Tech industry shows that intense collaboration in forecasting and planning is rarely practised. More moderate forms of collaboration, however, are often seen. This does not mean that there is no interest in this area, in fact the interest is often shown. High Tech organizations are very well aware of the supply chain benefits that collaboration in forecasting and planning might bring. The industry is, however, struggling with the question when collaboration in forecasting and planning will really work in a private situation and environment and what the pitfalls are.

The next chapter summarizes the factors that are essential in the next steps of collaboration in forecasting and planning. The goal of the collaboration investigation among the High Tech network members is to identify

Success factors!

The goal of the collaboration investigation among the High Tech network members is to identify success factors that can be used to increase the likelihood of an intensified collaboration relation in forecasting and planning.

Criticality in the supply chain relation between supplier and customer

The area where intense collaboration in forecasting and planning is expected to take place is in the area where both supplier and customer depend on each other for their mutual success. When only one of the partners really needs the other one it will be very difficult to set up forecast and planning

relationships that will be beneficial for both sides. The learnings were identified from companies that do have relationships that have a bilateral high criticality. In other words, companies in their supplier role that are critical for the success of the customer and at the same time the supplier is critical for the success of the customer and the other way around these relations have been used to find success factors.

Figure 6 shows the model used to find success factors that make intense collaboration in forecasting and planning really work. Especially box 4 is used to find factors that support successful collaboration in forecasting and planning.

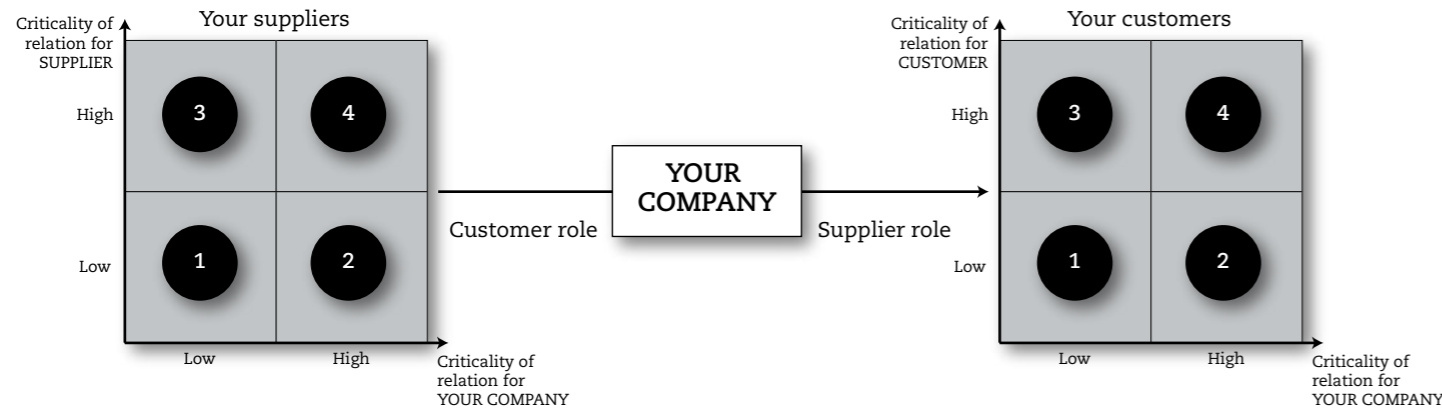


Figure 6: Criticality model

The interview focussed on the supply chain relations where both supply chain partners are critical for the success of each other (box 4). The success factors have been identified via the interview results based on the existing critical relations. The contributing interviewed companies interviewed with a box 4 relation are shown in figure 7.

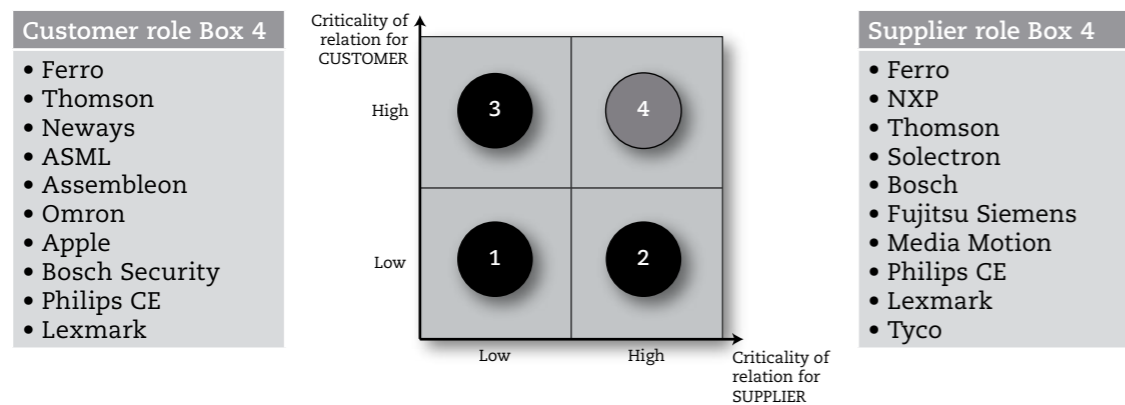


Figure 7: Supply chain relations interviewed for success factors identification, focus on Box 4

What makes the supply chain relation critical?

It was identified what the factors were that make the relation critical for both the supplier and the customer.

Critically for both suppliers and customers

- Business%
- Supplier image/brand
- Technology
- Co-design/R&D
- (Flexible) capacity

Figure 8: Criticality as seen by both supplier and customer

Interesting to discover is that the criticality for the customers is made up of more factors than for the suppliers. In other words, the customers have more reasons to regard their suppliers as so important than the suppliers have for their customers.

Critically for customers only

- Material/Service Availability/Volumes
- Available alternatives
- Key materials
- Long lead time materials
- SCM Service (VMI, prototypes)
- Business requirements
- Business knowledge of supplier
- Price

Figure 9: Criticality as seen by the customers only

The customers have more reasons to view their relation with the critical suppliers as critical. Understanding the customer's motives is an important attention area for the critical supplier.

It can be concluded that all companies recognize the fact that the criticality is indeed very important in the way of working between partners. A box 2 or 3 relation where only one of the partners is critical is very different from a box 4 relationship. Most companies can point out critical relations easily and recognize that bilateral criticality is the best foundation on which to build a supply chain collaboration relation.

The essential factors for successful collaboration in forecasting and planning!

Setting steps into a more profitable future requires vision on how to approach supply chain partners from a planning and forecasting perspective. From the EyeOn High Tech network a set of success factors has been identified. These success factors provide a guideline for companies that are evaluating the options for their own future and in relation with their critical supply chain partners. The critical success factors are to be found in the area of the strategy chosen, internal readiness, excellent execution, trust and innovation. These elements are described in more detail in the remainder of this section.

1. Strategic Direction



Figure 10: Success factor 1: Strategic direction

The choice to go for the direction of intensive collaboration in the area of planning and forecasting depends on the options a company has and the related chances to turn it into a success. Looking at supply chain partners that have a box 1 relationship there is no way to get attention for an intensified collaboration. Local optimization and trying to become more critical, meaning moving away from box 1 to box 2 or 3 are the best options.

A component manufacture supplier in Box 3:

"We really like the position we are in right now for this special productgroup. We are the sole supplier for our customers. We keep the selling prices up and we don't investigate in collaboration, why should we?"

Looking at box 2 and box 3 it means that one of the partners is already in a very comfortable position while the other one isn't. It will be very difficult to get the critical partner to join a collaboration programme when that same relation is not important for that partner. Box 1, 2 and 3 are typically poor starting points to make an intense collaboration relationship work.

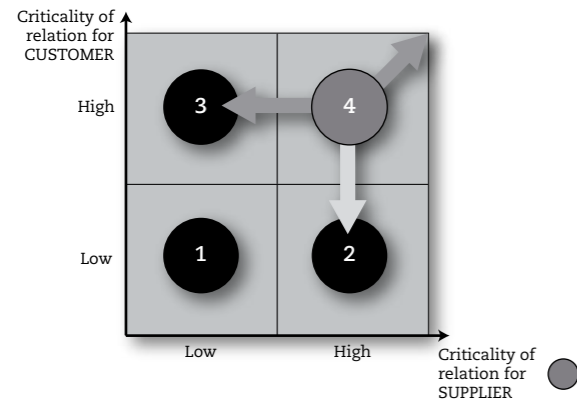


Figure 11: Bilateral strategic decision

In box 4, where both supply chain partners are critical to each other the best chances for success exist. Each partner has to make a strategic decision, however. Both partners

A component manufacture supplier in Box 4:

“We grew into a box 4 relation with our customer. We realized that by technology development that was very important to that customer. We are now the only supplier for them. We feel we have to make a choice now, bind ourselves or find more customers for our products”

that making the supplier less critical. Moving away from box 4 can be an independent decision of each supply chain partner. The real strategic challenge, however, is for both partners to move into the direction of the intensified box 4 relationship. Each partner can have his own arguments for his strategy of course, whether it's technology access or price driven or anything else is not relevant. This new direction is only possible when both partners declare that route as their strategic

An OEM customer in box 3:

“Our supplier forces us to set up all kind of programmes to optimize the supply chain. But to be honest we just have to join and we question if it will bring benefits for our company at all.”

have to consider what the direction should and could be. The supplier has the strategic choice to move from box 4 to box 3 by making himself less dependent on the critical customer. The customer, however, has a same dilemma, moving away from box 4 to box 2 and by doing that making the supplier less critical. Moving away from box 4 can be an independent decision of each supply chain partner. The real strategic challenge, however, is for both partners to move into the direction of the intensified box 4 relationship. Each partner can have his own arguments for his strategy of course, whether it's technology access or price driven or anything else is not relevant. This new direction is only possible when both partners declare that route as their strategic decision to move forward side by side. Collaboration courses that lack this bilateral strategic decision to intensify their collaboration relationship will not be built on a solid foundation.

2. Internal readiness

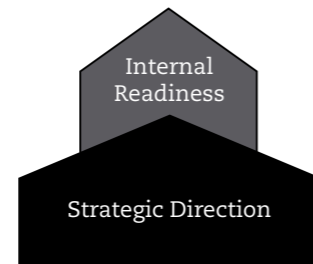


Figure 12: Success factor 2: Internal readiness

The second success factor is the readiness of a private internal organisation to take a step forward on the collaboration path. Collaboration with supply chain partners has everything to do with the external world. When the internal organisation is not at a minimum professional level of, for example, material coordination yet, forecasting and planning processes can not lean on robust and embedded processes with a minimum level of quality and reliability. Planning and forecasting processes should have reached a minimum maturity phase before they can be exposed to the outside world. First things first, and if internally the company is not ready, don't intensify the route of collaboration yet, but focus on the internal readiness.

An EMS customer in box 4:

“We have to admit there was a time when we just did not control our payments to our suppliers. It was a “mess” so to say. Although we were very critical for each other this withheld us from making progress in supply chain optimization with our supplier”

3. Excellent execution

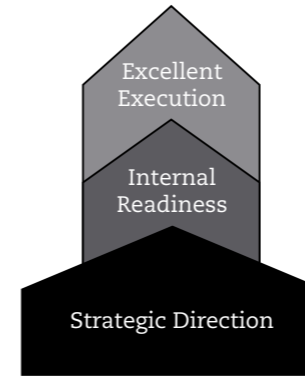


Figure 13: Success factor 3: Excellent execution

Exposing one's supply chain performance very directly to the partner, will show new areas that need attention and improvement. Continuous improvement and the drive to solve issues are required to deal with these focus areas. Good sets of evolving key performance indicators and processes to support improvement projects are required to be in control of the new and

Am EMS customer in box 4:

“We have set up a frequent programme to intensely discuss the performance issue between us and our supplier. Since we started we have solved many issues small ones and big ones but we are both doing a much better job now. It brought us stability in the hectic environment we are in“

unforeseen supply chain challenges. Also organisational cultural aspects play important roles in this area. Teams that can make the difference will pick up the lead and bring the supportive processes to the optimum level both internally and externally.

4. Trust

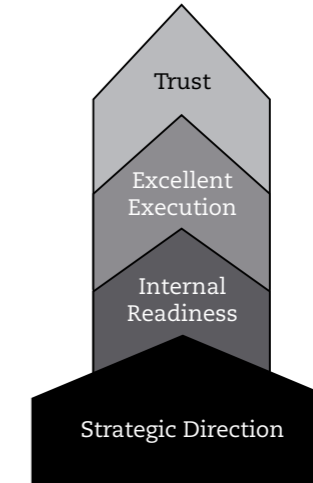


Figure 14: Success factor 4: Trust

Trust is mentioned as a key aspect in the relation with supply chain partners. Although it is possible to finish off the relationship with contracts as much as possible it will never bring you to the level that really gives you the targeted supply chain edge. Trust is often brought forward as one of the most important elements of success. What trust really means boils down to the following essential elements:

- Reliability : Doing what was promised
- Believability : Plans are in line with the expectations
- Sincerity : It is possible to discuss the relation in an open atmosphere
- Realize win/win : Acting in best interest of both parties

“The belief that the other party will act in the firm's interest in circumstances where that other party could take advantage or act opportunistically to gain at the firm's expense”

Figure 15: Definition of trust (McCutcheon and Stuart)

Trust starts from the top of the organisation
Another lesson is that trust starts at the top of the organisation and is expressed by the two supply chain partners. Deeper down in both organisations this “high level trust” has

to be turned into excellent performance by the operational and tactical processes in order to make it a sustainable level of trust.

Share and beware!

Although the importance of trust cannot be underestimated naivety should of course be avoided. Contracts are very important in cases of conflicts but should not limit the organisation in reaching goals.

Share fairly!

In a real collaborative relationship both sides want and have to gain. When one of the partners gets the idea that it is not a win/win situation anymore but a win/lose or win/WIN i.e. the benefits and costs are not shared in a fair way anymore, the relation tends to deteriorate. To get this right is indeed one of the most challenging items in the whole collaboration process.

5. Innovation

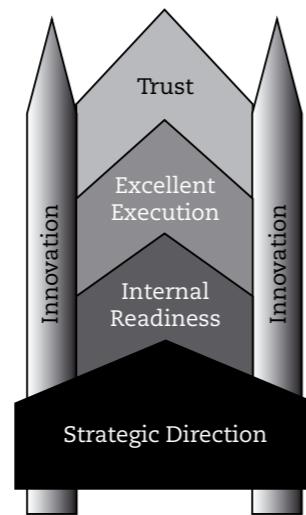


Figure 16: Success factor 5: Innovation

Innovation is an area with a very typical behaviour for supply chains; it can act both as a glue and a lubricant!

Innovation as a glue!

The relation between supplier and customer can be quite intensive from an innovation point of view. Customers might require cutting edge technology from their supplier. When the supplier is able to deliver this, the supplier-customer relationship can develop into a box 4 relationship. Both parties do need each other for their success; this is the gluing aspect of innovation.

A component manufacturer supplier in box 4:

“We were able to support the growth of our customer by developing special products for them. We invested especially for them. We built a robust relationship from both a development and a supply chain management point of view”

Innovation as lubricant!

Because the innovation glue did its job by bringing the organisations closely together it is now much easier to extend the relationship into the supply chain planning area to achieve improved operational excellence.

Conclusions

The research shows that most companies are very well aware of the complex and changing environment dynamics. However, the way to respond to that and whether and to what extent collaboration in forecast and planning should be considered, is a question that is struggled with.

The collaboration index shows that companies tend to share a lot of relevant data that still requires quite some effort to be turned into usable information. Also the quality of the data is an ongoing concern. Decision synchronization is not commonly spread at all, this means that concepts like collaborative planning have not yet found their way to many companies in the High Tech environment. Incentive alignment is still in the High Tech companies' exploration and learning phase, it is rarely seen in practice and still a big question mark how to be dealt with.

The criticality of the relationship between the supplier and the customer is seen as an important indication for the potential benefits of an intensified collaboration relationship on forecast and planning. In those cases where the relation between both supplier and customer is seen as critical from both sides a supply chain planning gain might be possible by intensifying the relationship and by implementing collaborative forecasting and planning processes.

To make this collaboration a success five success factors have been identified. First of all it requires a strategic decision to take the direction of collaboration, secondly the partners require a minimum level of internal readiness and maturity, thirdly operational excellence and continuous improvement processes should be embedded, fourthly trust plays a role that cannot be underestimated and fifthly innovation turns out to be both a glue in keeping partners together and a lubricant in extending the area of interest to supply chain planning.

References

- Aertsen, Versteijnen [2005]. “Responsive planning and forecasting in the high tech industry.” An EyeOn White paper.
- Aertsen, Wouters [2006]. “How to involve Sales in the Forecasting and Planning process?” An EyeOn White paper.
- Togar M. Simatupang, Ramaswami Sridharan [2005]. The collaboration index: a measure for supply chain collaboration.
- Yossi Sheffi [2002]. The value of CPFR.
- Chen [2005]. “Sales force incentives, market information, and production / inventory planning”. Management Science, No. 1, January 2005, pp 60 – 75.
- Moon and Mentzer and [1999]. “Improving Sales force forecasting. The journal of business forecasting”, pp 7 – 12.
- Business Logistics [2006. 06-07]. “Plannen over de bedrijfsgrenzen heen”, p8-13.
- Sung Min Kim, Joseph T. Mahoney [2006]. “Collaborative Planning, Forecasting and Replenishment (CPFR) as a relational contract”.

- Christian Terwiesch, Justin Z. Ren, Teck H. Ho, Morris A. Cohen [2003]. "An Empirical Analysis of Forecast Sharing in the Semiconductor Equipment Supply Chain".
- VICS [2006]. "CPFR An overview".
- Henk Akkermans, Paul Bogerd, Jan van Doremalen [2003]. "Travail, transparency and trust: A case study of computer-supported collaborative supply chain planning in high-tech electronics".
- Mark A. Moon [2004]. "What Is World-Class Forecasting?: A Perspective on 20 Years of Research".
- Pallab Saha [2005]. "Factors Influencing Broad Based CPFR".
- Alexander Kracklauer, Quinn Mills, Dirk Seifert [Marketing Ausgabe 03 Winter 2002/2003]. "Collaborative Customer Relationship Management (CCRM)".
- Marilyn M. Helms, Lawrence P. Ettkin, Sharon Chapman [2000]. "Supply chain forecasting Collaborative forecasting supports supply chain management".

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About EyeOn

In 100 days EyeOn supplies structural improvements in speed, efficiency and output reliability of the planning processes. EyeOn is a consulting firm specialized in designing and implementing planning solutions in complex organizations.

About High-Tech and Electronics Planning and Forecasting Knowledge network

The knowledge network High Tech and Electronics offers Supply Chain professionals a learning network on contemporary trends and best practises in planning and forecasting in the High Tech and Electronics Industry. HT&E enables members to share experiences and learn from each other via research, members presentations and benchmark studies whereas members' needs are closely reflected. EyeOn has initiated the network as per June 2005.

There is a possibility to meet each other in person semi-annually during Round Table sessions. HT&E is targeted at large- sized companies realizing at least 500 Million Euro sales revenues. The participating companies include: ASML, Apple, Avnet, Dell, Flextronics, Freescale, Fujitsu-Siemens, Omron, Philips, Mediamotion and Vodafone.

For more information: <http://www.eyeon.nl>