SUPPLIER SATISFACTION: THE CONCEPT AND A MEASUREMENT SYSTEM

A study to define the supplier satisfaction elements and usage as a management tool

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and Management,
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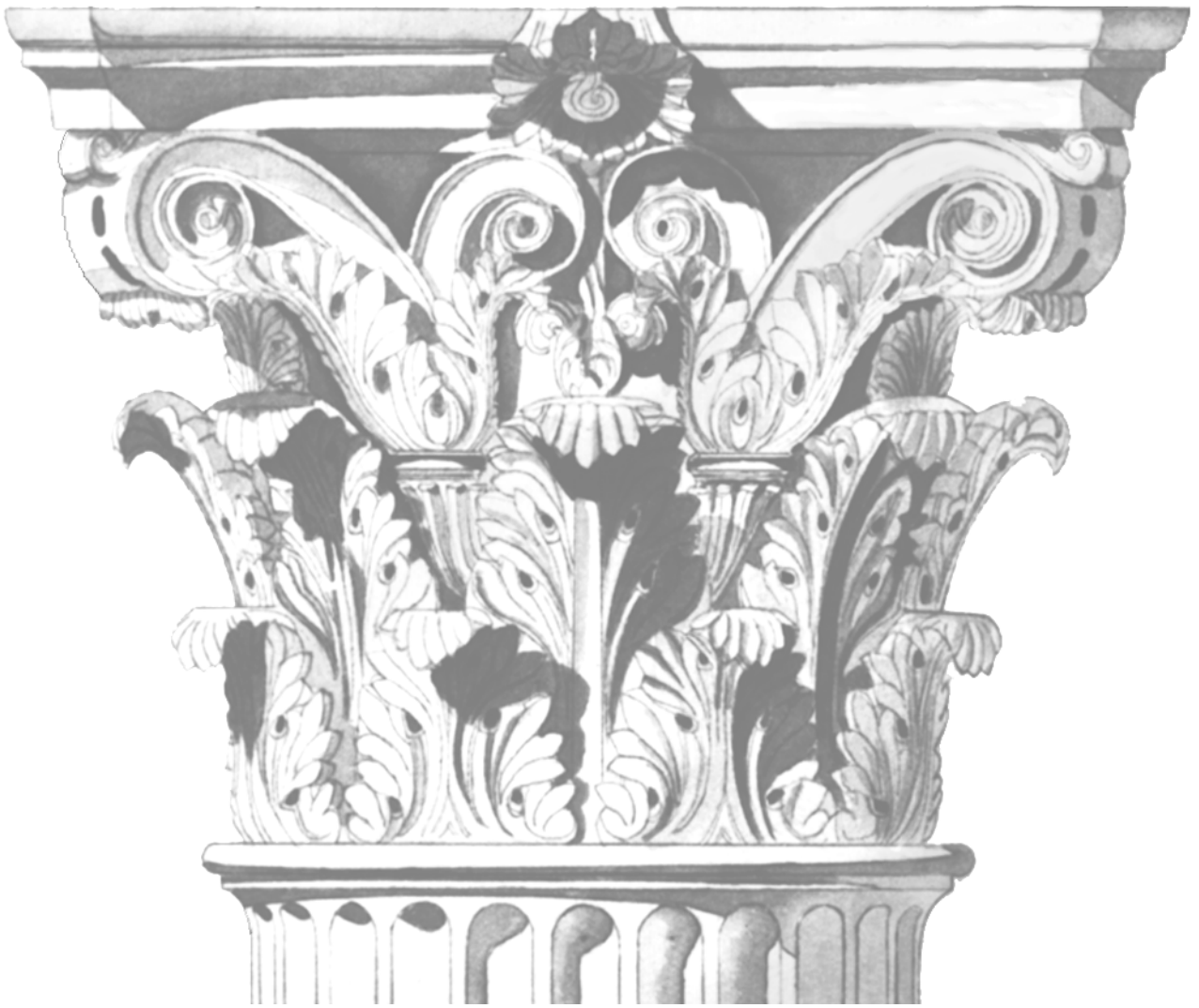
OULU 2003



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Academic Dissertation to be presented with the assent of the Faculty of Technology, University of Oulu, for public discussion in Kuusamonsali (Auditorium YB210), Linnanmaa, on November 14th, 2003, at 12 noon.

OULUN YLIOPISTO, OULU 2003

Supervised by
Professor Pekka Kess

Reviewed by
Professor Tauno Kekäle
Professor Veli-Matti Virolainen

ISBN 951-42-7168-8 (URL: http://herkules.oulu.fi/isbn9514271688/)

ALSO AVAILABLE IN PRINTED FORMAT
Acta Univ. Oul. C 190, 2003
ISBN 951-42-7167-X
ISSN 0355-3213 (URL: http://herkules.oulu.fi/issn03553213/)

OULU UNIVERSITY PRESS
OULU 2003

Maunu, Susanna, Supplier Satisfaction: the Concept and a Measurement System. A study to define the supplier satisfaction elements and usage as a management tool
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Oulu, Finland
2003

Abstract

There is no commonly agreed theory available to define supplier satisfaction and to measure it. Qualitative research is the key to find the definition and metrics for supplier satisfaction. It gives the possibility to refer behaviours, interactions between companies and organizational functioning.

This research has studied supplier satisfaction measurement and how it could be used as a management tool. Supplier Satisfaction Survey is a management tool for a company to improve and further develop its internal and external processes within its supply chain. The aim is to measure the quality of relationship between the supplier and 'the company' in terms of how the supplier views 'the company' both in business and communication- related aspects.

The results highlight the areas where the supplier and 'the company' have together invested resources to improve processes but also to identify areas that can still be improved. Survey results are also inputs for the strategic planning of the company as well as everyday operations and business behaviour.

Supplier satisfaction survey is the latest part of the continuous development of the supply chain management. A literature review tells how supply chain management has developed over time from setting a supply chain structure in place and further focusing more detailed parts such as cost structure and product customisation. The latest trend is to have close cooperation with supply chain partners and synchronize operations -in particular the supplier and manufacturing part of the supply chain need fine-tuning.

Keywords: Satisfaction Survey, Supply Chain Management

Maunu, Susanna, Toimittajatyytyväisyys: konsepti ja sen mittaaminen. Tutkimus toimittajatyytyväisyyden elementtien määrittelemisestä ja käyttämisestä johtamistyökaluna

Tuotantotalouden osasto, Oulun yliopisto, PL 4300, FIN-90014 Oulun yliopisto, Finland

2003

Oulu, Finland

Tiivistelmä

Toimittajatyytyväisyyden ja sen mittaamiseen ei vielä ole yleisesti hyväksyttyä (/sovittua) teoriaa. Kvalitatiivinen tutkimus antaa työkalut määritelmän ja mittareiden luomiseen. Se mahdollistaa tutkia käyttäymistä, vuorovaikutuksia yritysten ja organisaatioiden välillä. Toimittajatyytyväisyys on yrityksen johtamistyökalu, jonka avulla yritys voi parantaa ja edelleen kehittää niin sisäisiä kuin ulkoisia prosesseja toimittajaketjussa. Ideana on mitata toimittajasuhteen laatua - miten toimittaja arvostaa ostajayrityksen toimintaa kaupanteon ja kommunikaation näkökulmasta.

Tässä tutkimuksessa keskitytään ensin toimittajatyytyväisyyden konseptin luomiseen ja toiseksi toimittajatyytyväisyyden mittaamiseen ja kuinka sitä voidaan edelleen käyttää yrityksen johtamistyökaluna. Tulokset tuovat esiin alueet, mihin toimittaja ja ostajayritys ovat yhdessä jo investoinneet resursseja parantaakseen prosesseja, mutta myös ne alueet, joihin vielä pitää kiinnittää huomiota. Tulokset toimivat informaationa niin yrityksen strategisessa suunnittelussa kuin joka päiväisessä toiminnassa.

Toimittajatyytyväisyyden mittaus on uusimpia menetelmiä jatkuvasti kehittyvässä toimittajaketjun hallinnassa. Kirjallisuuskatsaus kertoo kuinka toimittajaketjun hallinta on kehittynyt aikojen kuluessa alkaen toimittajaketjun rakenteen kuvaamisesta ja edelleen keskittyen yksityiskohtaisempiin alueisiin kuten kustannuksiin ja tuotteiden yksilöintiin. Viimeisimpinä trendeinä ovat olleet yhteistyön parantaminen toimittajaketjussa olevien yritysten välillä, aktiviteettien synkronointi ja erityisesti toimittaja - valmistaja lenkin kooperaation hiominen.

Asi asanat: toimittajaketju, tyytyväisyys -mielipidemittaus

To my parents

Acknowledgements

All started in 1994 Autumn, when I joined the Industrial Engineering post-graduation seminar group in the University of Oulu. The group consisted of members from the business and academic worlds. This mixture gave a fruitful flavour for presentations and discussions. Opinions and experiences were shared in an intensive way. Those seminar sessions gave an excellent foundation for this study and most of all it was a very supportive and motivating environment for a person who had just graduated and was just learning business life.

Another inspiration spring has been Teekkaritorvet, my long lasting hobby or sometimes it could be even called my other family. I'm not joking when saying that the Teekkaritorvet orchestra could make own assembly called 'Tohtoritorvet'. So many of the Teekkaritorvet members have been inspired to continue their studies as well as playing. The final impulse to continue my studies I got from my dear friend Ilkka Vihriälä, without his 'kick' you wouldn't be reading this book today.

The supplier satisfaction research phase started in 1999. Nokia Mobiles Phones (NMP), my employer decided to further develop its sourcing function including the supply chain. Supplier satisfaction turned out to be a topic that didn't have commonly agreed definitions and ready to use models. At the very beginning the idea rich research team was Professor Pekka Kess from the University of Oulu, and from Nokia Mobile Phones Jean-Francois Baril, Pekka Lohiniva and Jari Niskanen. During the research the team has changed according to changing needs. But what has been most rewarding is that all of the people who have been participating the research have taken the job seriously and added value to the end result. I hope that you all recognise yourselves and feel the same way.

One of the learning highlights during the research phase was my participation in the 12th International Working Seminar on Production Economics in Igls, Austria February 2002. During the seminar I got real academic insight. Thanks to seminar presentations and discussions, but also not forgetting the networking on ski slopes and other activities in the beautiful Austrian village. Another learning experience has been coaching Elisa Ohenoja's Bachelor degree. Her study was focused on making the questionnaire part of this research. Together we pushed each other onwards in our studies.

Nokia Mobile Phones and my line managers had all the time given me excellent support to do the research in parallel with my daily job. I hope the results of the research have given my gratitude on some level back too. The NMP Library in Oulu and its personnel has been during these past nine years more than a gold mine. I feel really privileged. Service has been GREAT, even when I moved to work in the NMP San Diego office in California.

These nine years have had their up and down hills, but I appreciate how supportive and encouraging my family has been. I haven't specified my next challenge yet, but be aware there will be something and I need you to be there – 'The Family Maunu' as my parents Kerttu and Lassi Maunu, my sister Hannele Rekilä and her family and brother Petteri Maunu and his family and my significant other Markku Hiltunen.

San Diego, September 2003 Susanna Maunu

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1 Introduction

At first glance, selling and buying appear to be different and independent from each other's. Suppliers make customer satisfaction studies and assess buyer needs in order to ensure flawless delivery performance. There is dependence between selling and buying: quality production requires quality supply.

Supply chain management has been built up by evolution steps. Every step has had a certain need in order to improve supply chain performance. This need could have been both internal and external. The next step is to integrate supplier, manufacturer and customer's processes in order to be able to satisfy all the time more demanding customers and do that successfully in the business respect.

Supplier Satisfaction has become a topical issue to improve processes by having working relations with suppliers. Donath (1991) expands on supplier satisfaction to be something, which is just discovered in companies. And the change towards it starts with our individual attitudes toward suppliers.

As evidence some reports are available about companies running their own supplier satisfaction surveys, probing the organisation's purchasing underbelly Donath (1991). Barrier (1994) continues with the same subject. 'A business that is genuinely concerned itself about its own customers may still be a terrible customer itself making life hellish for its suppliers' wrote Michael Barrier in Nation Business. In the same article Barrier refers to the late W. Edwards Deming, who stated: "How can a Supplier be innovative and develop economy in his production processes, when he can only look forward to short-term business with a purchaser?" Instead of a long-term relationship -loyalty and trust between a business and its suppliers.

There are several similar kinds of articles written on the topics: If You Want Better Service, Be A Better Customer (Hatch & Graulich 1991). Hatch and Graulich (1991) approached customer service in a broader context. Each of us, individually, can improve matters by being better consumers of service. E.g. all managers are dependent on providers of vendor's service, whether the sources are internal and external. The traditional customer-supplier hierarchy is no longer enough to receive consistently good service. It is important to recognise that your supplier is also your customer. You are in competition with several other companies for a share of this supplier's service. You are no longer in a place where you can try to get better and more service by throwing in more money.

Supplier Satisfaction is one of those tricky things that have several definitions. There are no right or wrong answers either. There has been discussion about it for about 20 years now, but no official, theoretical definition is available.

1.1 Background and rationale of the research

This work is based on the experience of the last nine years when the researcher has worked in an industrial company operating in world wide markets with suppliers operating globally, regionally, nationally and/or locally. The company is referred through out this study as 'the company'.

‘The Company’ is one of the most successful companies in the IT industry in the world. In the last past nine years ‘the company’ has witnessed both enormous growth in sales volumes and in storage values. In order to better compete and perform in the IT industry ‘the company’ has developed its internal processes systematically towards excellence in sourcing functions performance.

In 1999 a project to measure supplier satisfaction was established at the request of the sourcing management team. In the project set up the measurement method was decided to be a survey.

The purpose of the survey was to measure how ‘the company’ is performing through external eyes. The survey aimed to measure the quality of the relationship between supplier and ‘the company’ in terms of how the supplier views ‘the company’. The results were expected to highlight the areas where the supplier and ‘the company’ have together invested resources to improve key processes but also to identify areas where there is still room for improvement.

In the end the Supplier Satisfaction Survey could be considered as a management tool for a company to improve and further develop its internal processes and external processes with suppliers and partners in the supply chain network. The survey aimed to address both business and communication-related aspects. Survey results are inputs for the strategic planning of the company as well as everyday operations and behaviour. The focus of the survey can vary in each survey even the questionnaire is the same. It is important that ‘the company’ is able to measure those activities in which it has been investing recently or areas which performance were scored poorly in previous surveys and at the same time share the new development possibilities in the supply chain through supplier satisfaction with the academic world and across other companies, who are interested to develop their supply chain further.

Supplier satisfaction has no theoretical commonly agreed definitions, as following the chapters present the literature findings under the topic. However clear links to different theories around supply chain management are visible. Supplier satisfaction is an unquestionable part of supply chain management. It has also elements which can be considered as a part of supplier management, partnership/supplier relation management and collaboration. Positioning of supplier satisfaction in the current theory framework will give value-added for this study and a reason to study the topic even further than just implement the satisfaction survey.

With these arguments this research was targeted to build up a model for a management tool and not only to implement the satisfaction survey.

1.2 Research Problem

Regardless of the primary objective of a business, satisfactory profits must be obtained if the business is to remain financially viable in the long run (Dillon *et al.* 1990). Marketing research is helping to understand customer needs and company development in order to satisfy customers better.

Marketing research is a method to systematically define customer requirements. It is a systematic gathering, recording, processing, and analysing of marketing data, which will help the company to uncover opportunities and to reduce risks in decision making. (Dillon *et al.* 1990)

Hayes (1998) has created a general model for the development and use of customer satisfaction questionnaires.

Knowledge of customer requirements is essential for two reasons:

1. It provides a better understanding of how customers define the quality of products or services. And the better one understands the requirements, the better position one has to satisfy customers.
2. Knowledge of customer requirements will facilitate the development of the customer satisfaction questionnaire.

Fig. 1 illustrates the model.

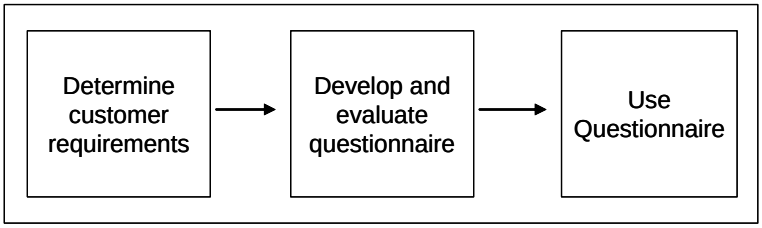

Fig. 1. A general model for the development and use of customer satisfaction questionnaires. (Hayes 1998)

The first step in the process is to identify a customer's requirements or quality dimensions, the important characteristics of the product or service. Customer requirements define the quality of products or services. (Hayes 1998)

The second step in the process is to develop the right questions from the defined requirements, agree question types and ensure the reliability and validity of the questionnaire.

The third step is to use the questionnaire. Not only to have a survey, but also understand the results and use them to develop the sourcing function and its activities onwards. This is the phase when measurements are taken into 'the company's' management system.

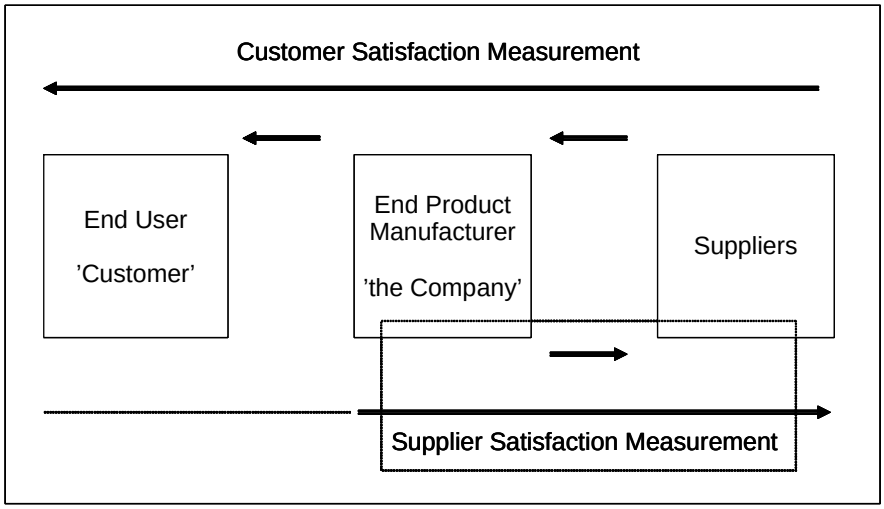

Fig. 2. Framework of Research Problem.

It can be seen from Fig. 2 that customer satisfaction measurement is already in use between different parts of the supply chain. Manufacturers (of end-products, modules, components) have been interested to know how their customers feel about their products and services in order to improve their business position. So is there still room for improvement in the supply chain?

What kind of role has supplier satisfaction then? Supplier satisfaction is coming next as a tool to improve the competitiveness of companies. Integration of the supplier's value chain to the 'business' value chain has not happened yet. Supplier satisfaction measurement gives us opportunity to develop supplier relations in a way that both parties are willing and capable to do it.

The old phrase 'What you measure is what you get!' works here, too. Adding Supplier Satisfaction Measurement to companies' every day routines, added value can be found from measures/results. Results are used as customer satisfaction measures, but they also have a big impact on improving working habits to be more effective.

This becomes a research problem: there is not any commonly agreed theory available to define supplier satisfaction and model how to use the measured dimensions in companies.

1.3 Research Objective

The biggest challenge is to define supplier satisfaction, create a supplier satisfaction survey with the right questions and model the supplier satisfaction survey as a management tool.

The Supplier Satisfaction definition is the starting point and the most critical phase in this study. Later the survey results and study contribution is based on how successfully the definition has been created. The supplier satisfaction definition is the first used in questionnaire creation. This is the second critical phase of the study. In order to get reliable and usable results, questions need to be right.

During this study three surveys were made in the case company. All surveys had the objective to measure the current status of supplier satisfaction to understand the areas where there is need for improvement. Surveys were critically analysed in order to verify that supplier satisfaction definition was correct not only to provide result information to the company.

Surveys are easily used as a one-time exercise. Questions do not necessarily ask about the right issues and results are not analysed, understood and used in the company. In this study one objective was to model the survey as a management tool. A tool which is linked to the company's strategic and operational activities.

The primary customer of the supplier satisfaction project is 'the company'. This study has been made with a wider focus than just targeting a project report. A scientific approach has been added to serve the scientific audience and studies in the area of supply chain management. Also 'the company' benefits from this approach, because in this way the supplier satisfaction definition, survey and management tool get better acceptance among the suppliers.

This study has been conducted by following the guidelines (Olkkonen 1993) for scientific research criteria. There are three criteria to define scientific research:

- It includes a declarative sentence (result),
- It adds to knowledge (contribution), and the
- Method is well-founded, acceptable, and without gaps

A study should contain a declarative sentence, which can be then showed true in the results. "To fulfil the requirement of contribution to knowledge a scientific work should be based on a significant question, problem, or hypothesis. The work should be original and should relate to, explain, solve or add proof to the question, problem or hypothesis. The result is additive, it adds to knowledge. The results are usually expected to result in generalization".

The method should be well founded and linked to existing theories. Data collection and analyses are acceptable and results can be explained and proved without gaps. Methods should convince the audience to that the presented results are new and have contribution. (Olkkonen 1993)

1.4 Research Approach

Since the research objective has two clearly different tasks: define supplier satisfaction and create a supplier satisfaction survey with the right questions to be used as a management tool, this study has two different research approaches. The concept analytical research approach is used to define supplier satisfaction. This definition is then used in the other part of the study, which covers survey creation and modelling of the management tool. The constructive research approach is chosen to be used as the major research

approach. According to Olkkonen (1993) it is very common that studies have two research approaches. The concept analytical research approach is used to establish the basic definitions of the study regardless of the major nature of the study (Olkkonen 1993).

1.4.1 Concept analytical research approach

The purpose of the *concept analytical research approach* is to develop new doctrines. New concepts are needed, for example, to describe and recognise phenomena, classify information etc. Concepts can be totally new or developed versions of existing concepts. A concept itself does not have an independent meaning. It is suppose to serve some other intention or task. (Olkkonen 1993)

Typical concept analytical research methods are reasoning, analysis, synthesis and comparison. Results will be tests in order to prove that it works and it is more suitable and useful than the old existing concept. Testing is based on argumentation instead of verification. Testing covers collecting evidence from different applications and by comparing and extrapolating it with other existing concepts. Research objects are typically facts, values or norms, and results may be both descriptive and normative. (Olkkonen 1993)

1.4.2 Constructive research approach

The Constructive research approach is significant in industrial economics studies. It is typical for technology and other planning sciences. The main drivers in the constructive research approach are creativity, innovativeness and heuristics. Creativity and innovativeness are sources when constructing problem-solving methods. To find, develop and test a solution step by step has heuristic features. Additionally the constructive research method requires testing results (construction) in practice. (Olkkonen 1993)

An objective in constructive research is to create a clearly new design construct for problem solving and which can be applied in whole area of a problem type. It is not a solution for one case. Result testing and verification are done with scientific criteria. The scientific value of the result is that it adds common knowledge and theory around the problem solving in question. (Olkkonen 1993)

Kasanen *et al.* (1991) have presented the following steps for constructive research:

1. Searching for a relevant and interesting research problem.
2. Gaining an understanding of the research problem
3. Phase of innovation, construction of the model
4. Practical testing of the model (verification)
5. Exposition of the theoretical under-spinning of the solution and statement of the contribution to scientific knowledge
6. Examination of the limitations.

This structure is also followed in this research study, resulting in a measurement method. Step one is presented in chapter 1 Introduction.

1.4.3 Positioning of concept analytical and constructive research

There are different methods and paradigms available to support different scientific approaches. The key thing is to choose methods that support your scientific problem (declarative sentence) by applying thinking and interpreting, which leads to the desired end result.

One of the basic paradigm partitions is quantitative and qualitative study. In industrial economics studies are divided into normative and descriptive researches. Normative research is looking for results which can be utilised when developing current activities or creating something new. Descriptive research tries to describe the phenomena by creating concepts, describing processes etc in order to increase the understanding of the phenomena.

Another partitioning basis is theoretical and empirical research. Sommer and Sommer (2002) define two components of a scientific body of knowledge: empirical research and theory. According to Sommer and Sommer (2002) empirical research involves the measurement of observable events. Empirical refers to information that is sense-based. Sommer and Sommer continues with theories which are systematic statements of principles that explain natural phenomena. They are not themselves directly observable but can be supported or refuted by empirical findings.

The following Fig. 3 presents the positioning of concept analytical and constructive research as Kasanen *et al.* (1991) defines it.

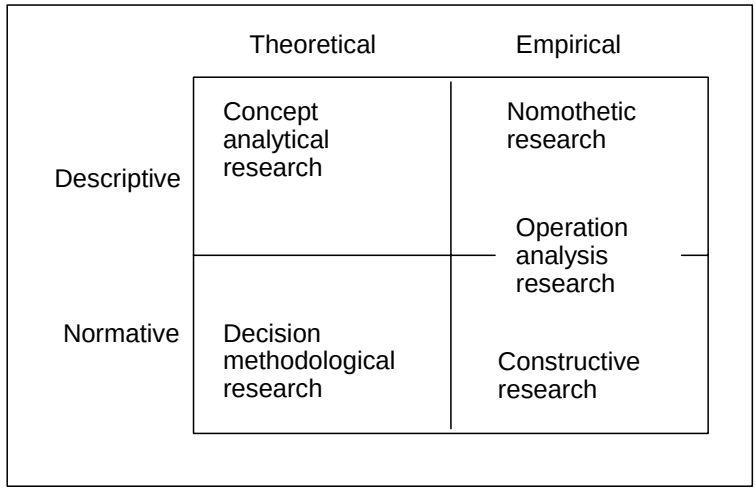

Fig. 3. The positioning of constructive and concept analytical research (Kasanen *et al.* 1991).

Figure 3 shows the positioning and interdependences between different research methods. Concept analytical and constructive researches have been described in the previous chapter. Following are short descriptions of research methods to clarify the differences in research approaches.

Decision methodological research is oriented to developing problem solving methods. It is based on theories and philosophies such as micro theory, decision theory, game theory and positivism. The methodology is similar to mathematics and logic. The results are applicable solutions to explicit problems. (Neilimo & Näsi in Olkkonen 1993).

Nomothetic research is focusing on descriptions and causal relations. It is based on a positivist philosophy an emphasising empirical approach. Nomothetic research has a substantial methodological institution. It is possible to use results e.g. in forecasting and planning of activities. (Neilimo & Näsi in Olkkonen 1993).

Operation analysis research is mainly aiming at understanding the object. It is typically a hermeneutic approach with a limited set of data. The research object is studied in-depth. Operation analysis does not have a well-established methodological institution. The results are often new hypotheses, theories, doctrines or descriptions of development processes. To increase result reliability a nomothetic research part could be added to a study when verifying results. (Neilimo & Näsi in Olkkonen 1993, Olkkonen 1993).

Before summarizing the research method selection, action research needs to be presented. Action research was developed by Kurt Lewis and his colleagues in the 1940s and 1950s as a collective problem solving cycle for improving (Calhoun 1993). It can be described as a family of research methodologies which pursue action (or change) and research (or understanding) at the same time (Dick 1999). The action research process is described in Fig. 4 (Field 2003) and it is characterized by spiraling cycles of problem identification, systematic data collection, reflection, analysis, data-driven action taking, and finally problem redefinition (Johnson 1993).

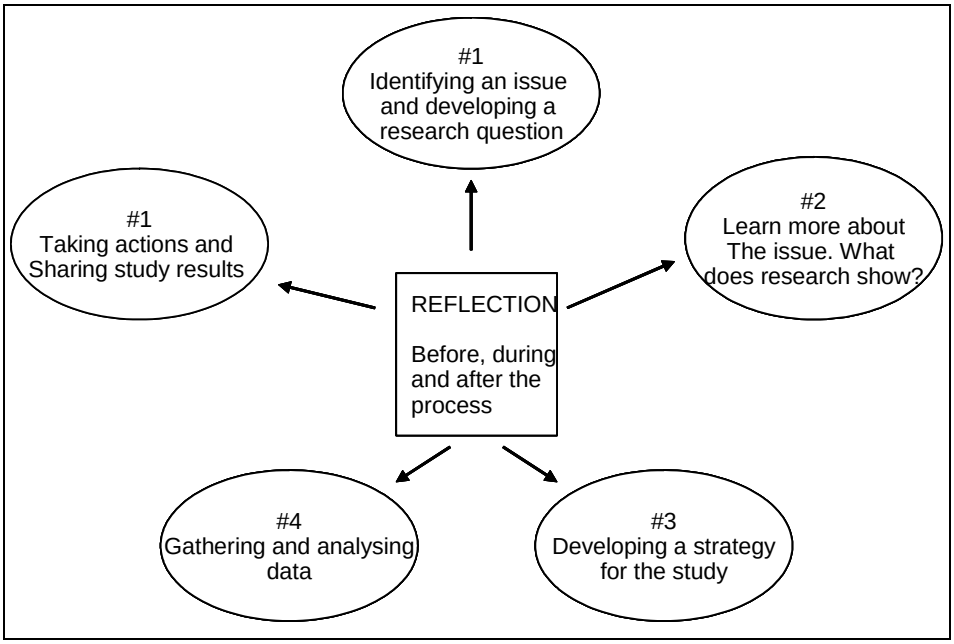

Fig. 4. Action research process (Field 2003).

This study implementation has a lot of elements from action research. The biggest argument to select the constructive research method instead of action research is the result testing and how well results can be generalized. Action research results are targeted to improve the current way of working, process etc. and it is typically used as a research method in a single organization. It could be run as an individual/personal, collaborative/ group or institution/organization wide research (Calhoun 1993). The requirements for constructive research are presented later in chapter 4.2.

As a summary according to Olkkonen (1993) when so called business persons are doing their post–graduation studies, the main interest is to have a research area which is close to their everyday business related problems and solutions developed for them. This kind of research subject is, as such, suitable and beneficial. Description of solution is not however enough for scientific work. It must be added with a theory tie-in, provide evidence and review to get the needed level of generalizing. The constructive research approach is often the right solution.

1.5 Structure of this thesis

The structure of this thesis follows the following chapter chart:

Chapter one is dedicated to the research introduction. The research background and motivational factors are presented to have an understanding of the research starting point and environment. Also the description of the environment of scientific approaches is discussed in the chapter.

Theories are presented in chapter two. The theoretical framework on which this study is grounded, covers the understanding of supply chain management, its history and definitions. Also understanding different supply chain dimensions like partnership, supply management and collaboration, quality management, reverse marketing, buyer-seller relation barriers and loyalty are the topics chosen to justify the answers to the question why this is a valid problem to solve.

Other frame dimensions, which are also discussed in chapter two, are relating more to measurement in order to increase the reliability of the created solution. Supplier satisfaction measurement has been compared to customer satisfaction measurement and 360 methodology. These theories have been used in the construction part.

Chapter three is the heart of this research. It includes a detailed description of research results – supplier satisfaction as a management tool. Another valuable element is a detailed process description of how this research has been made and how similar kind of surveys can be repeated. Finally in chapter three the supplier satisfaction is defined and justified.

During the research the researcher has used different methods and tools to conduct the construction part of the study. There were three phases during the study when the researcher used external resources: brainstorming, face-to-face interviews and survey facilitation. The researcher called brainstorming team to give inputs for questionnaire creation as described in Fig. 22 and further in chapter 3.2.1.2. Purchasing managers was asked to interview suppliers face-to-face. They conducted the interviews according to the instructions described in chapter 3.2.1.3. This was a beneficial, practical solution, since

the purchasing manager works daily with suppliers and the discussions were assumed to be open and honest and also different purchasing managers were used, so that even if the interviewer had lead the discussion in a certain direction, the other interviewer had it the other way. Survey facilitation was subcontracted. The researcher selected the subcontractor based on their quotations. Subcontractors act according to the instructions of the researcher as described in chapter 3.2.3.

When chapter three concentrates very much on the practical approach of the research, chapter four reviews the scientific contribution of the research, first against requirements of concept analytical and constructive research and secondly through common scientific research requirements. Chapter five continues the scientific theme and concentrates on discussion of possible areas for future studies. Chapter six concludes everything as a summary of this study.

2 Framework for Supplier Satisfaction

Satisfaction has been defined as a pleasant feeling. You feel satisfaction when you do something successfully, or when something good happens to you (http://www.anti-moon.com/words/satisfaction-n.htm). In business relationship Anderson and Narus (1984) have defined satisfaction as "a positive affective state resulting from the appraisal of all aspects of a firm's working relationship with another company". This definition for satisfaction is also used in this study. Satisfaction measures are also needed, when there is need to address how well a system meets the user's needs and requirements (http://www.sei.cmu.edu/str/indexes/glossary/need-satisfaction-measures.html).

These definitions of satisfaction are in line with the objectives of this study and measures. During the different phases of the study several literature searches were made in order to understand what has been already studied and defined as a common agreed theory for the supplier satisfaction. Literature searches have been done by using databases like ABI/Inform, Econlit, PsycInfo, BAMP, Compendex and Inspec. The latest results of the literature search in April 2003 followed the results of the earlier searches. Recent research report articles cover the supply chain and relationships between different stakeholders of the supply chain. Supplier relationships are discussed from several viewpoints. Wagner and Boutellier (2002) discuss the capabilities for managing a portfolio of supplier relationships and state that strategic partnerships are more and more essential, because companies can no longer possess all competences. Spekman *et al.* (2002) cover also supply chain competence, its impact on learning and effective management of the supply chain.

Trust as a key factor in long-term business relationships is covered in several articles. Coulter and Coulter (2003) discuss the development of the trust in relationships. Handfield and Bechtel (2002) discuss the role of trust and its capability to improve supply chain responsiveness. Another key factor is commitment. Tellefsen (2002) discusses commitment through the role of organizational and personal needs in business relationships from the purchasing manager´s perspective. Walter *et al.* (2003) specify elements of the supplier relationship quality as commitment, trust and satisfaction.

Satisfaction is covered in articles as is customer satisfaction in buyer-supplier relationships (Homburg *et al.* (2002), as a part of quality practices (Dean & Terziovski 2001) and as a rating for vendor quality performance (Chen &Yang 2002).

Flint *et al.* (2002) have explored the phenomenon of customers´ desired value change, which provides a reason for customers to seek, maintain, or move away from relationships with suppliers. According to Boston and Keller (2002) long-term relationships are being built based on total cost, trust, innovation, quality and flexibility. In order to make that happen Boston and Keller (2002) suggest management by cross-functional customer-supplier teams. This approach has the same elements as early supplier involvement, which is discussed later in this book.

La Londe and Raddatz (2002) presents tools for improving customer-supplier relationships, from supplier management towards relationship management. The supplier survey is presented as a tool which instead of the customer feedback to the supplier, gathers information from the supplier on how well the customer's processes perform and the effectiveness of the relationship (La Londe & Raddatz 2002). This article has the most in common with this study. In addition to the article this study defines the supplier satisfaction elements and presents a survey as a management tool.

Based on results of the literature searches it is justified to comment that Supplier Satisfaction is one of those tricky things that have several definitions. There has been discussion about it for about 20 years now, but no official, theoretical definition is available

In this study Supplier Satisfaction has been considered

- As an element of supply chain management including partnership, supply management and collaboration, quality management and reverse marketing,
- As an analogical element with customer satisfaction including marketing research and
- As analogical approach with 360 methodology.

Fig. 5 illustrates the theoretical framework for supplier satisfaction

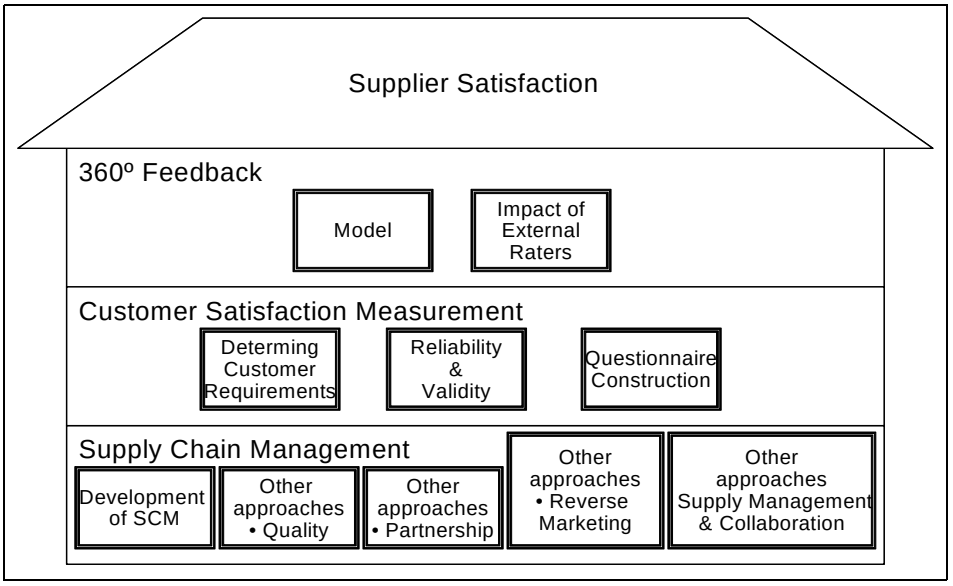

Fig. 5. Theoretical framework for Supplier Satisfaction.

In following chapter we will review supplier satisfaction from all these aspects.

2.1 Supplier satisfaction as a part of supply chain management

2.1.1 Definitions of Supply Chain Management

The literature has several definitions for Supply Chain Management. Handfield and Nichols (1999) have defined the term in two steps in their book: Introduction to supply chain management. First the Supply Chain encompasses all activities associated with the flow and transformation of goods from the raw materials stage, through to the end user, as well as the associated information flows. Material and information flow both up and down the supply chain. Second the Supply chain management is the integration of these activities through improved supply chain relationships, to achieve a sustainable competitive advantage.

On the other hand Kuglin (1998) defines supply chain management for a manufacturer. The manufacturer and its suppliers, vendors, and customers – that is, all links in the extended enterprise – work together to provide a common product and service to the marketplace that the customer is willing to pay for. This multi-company group, functioning as one extended enterprise, makes optimum use of shared resources (people, processes, technology, and performance measurements) to achieve operating synergy. The result is a product and service that are high quality, low-cost, and delivered quickly to the marketplace.

Supply Chain Management is such an attractive 'thing' that e.g. Kuglin (1998) has developed the term and content further towards customer-centered supply chain management. Now the previous definition gets a slightly different angle. The manufacturer and its suppliers, vendors, and customers – that is, all links in the extended enterprise – working together to provide a common product and service to the marketplace that the customer *desired and* is willing to pay for *throughout the life cycle of the product and service*. This multi-company group, functioning as one extended enterprise, makes optimum use of shared resources (people, processes, technology, and performance measurements) to achieve operating synergy. The result is a product and service that are high quality, low-cost, and delivered quickly to the market place *and achieves customer satisfaction*.

On other occasions supply chain management is referred to as business logistics management. Logistics is, as Ballou (1999) states, the process of planning, implementing, and controlling the efficient, cost-effective flow and storage of raw materials, in process inventory, finished goods and related information from point of origin to point of consumption for the purpose of conforming to customer requirements (Ballou 1999). So all elements of logistics are part of supply chain management. The key here is, as Handfield and Nichols (1999) mentioned in their definition, activity integration between companies (Handfield & Nichols 1999).

Several definitions for supply chain management exist. Luckily they are all more or less the same by content. That is why it is more valuable to understand the content behind the words Supplier Chain Management than try to find one comprehensive definition. In the following chapters we will take a look at history, deployment and current state including the driving elements of Supply Chain Management.

2.1.2 History of Supply Chain Management

The need for acquiring supporting goods and services is almost coincidental with the formation of business. Only the earliest farmer could boast of total self-sufficiency, vertical integration as it is called today's world. (Riggs & Robbins 1998)

From the earliest days to the 1930's business acquired the goods and services required to make or deliver their products in an ad hoc manner. By the 1930's Adam Smith had created theories by reorganizing work tasks in a new order to increase a worker's efficiency. This was an early step in functional organization structures, which still exists today. (Riggs & Robbins 1998)

From the 1930's through to the 1970's, this centralized function worked well. Businesses gained leverage in their purchasing and efficiency from standardized practices in the transactional process of buying, receiving, and paying bills. (Riggs & Robbins 1998)

The 1970's was the next cornerstone in organizational concepts. It was a time of the advent of the individual and at the same time there was discussion of the power of teams. These two directly challenged every centralized functional organisation in a business, such as accounting and information services by creating the need to add dedicated people to supply functional support to individual businesses resulting in added management infrastructure and staffing costs. (Riggs & Robbins 1998)

In the 1980's and early 1990's, the majority of companies focused their supply chain initiatives on re-engineering supply chain cost structures Andersen Consulting (1999). The focus was on price and how to get a lower price. Substantial cost savings exist, so the process was passed down the chain. It was the time that companies started to trim their supplier base, limiting the number of suppliers they had to deal with. Companies had the opportunity to manage those suppliers more effectively and even started to re-engineer some procurement processes. (Riggs & Robbins 1998)

In the 1990's a new driving force in corporate strategy has been delighting global customers. Customers have become increasingly demanding, expecting even higher levels of product and service performance. Customers are coming to expect greater customisation of products and services for their individual needs. And this is happening in every area of industry. At the same time customers are used to a constant stream of innovations in the goods and services they use that either reduces the cost or improves the benefits they receive. (Andersen Consulting 1999)

Supply chain strategies were, and are still, undergoing tremendous changes in response to these pressures set by the market. Outsourcing and partnering with other enterprises are more and more commonplace as companies seek to share the burden of the demand for more complex products and more responsiveness services. (Andersen Consulting 1999)

In the 2000's we have seen the first marks of the next evolution in supply chain management – supply chain design and operations will drive. Anderson and Lee have named this evolution step Synchronised Supply Chains in their article Andersen Consulting (1999). Synchronised Supply Chains encompass three major structural changes in how companies will manage supply chain operations:

- Companies will collaborate with supply chain partners and synchronise operations
- Technology and the world wide web will be key enablers of innovative supply chain strategies
- Supply chain organisations will be restructured and reskilled to achieve these goals

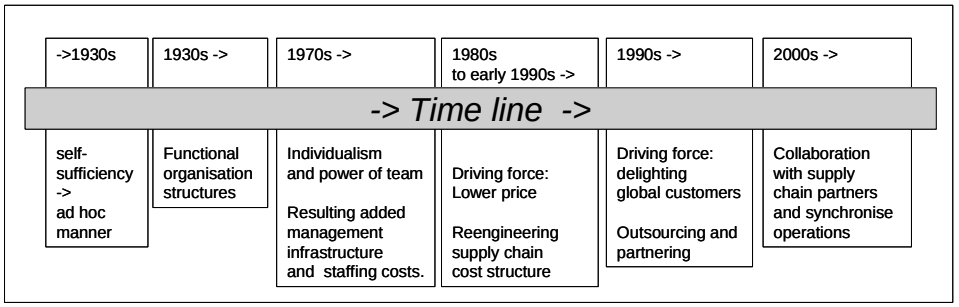

Fig. 6. Evolution of Supply Chain Management in a time line.

Fig. 6 summarizes the history of supply chain management evolution.

In following chapter the focus will be on supply chain management deployment in the recent past and today's trends.

2.1.3 Concept of Supply Chain Management

In today's competitive marketplace, where every business is striving to reduce the cost of delivering more distinctive products or services to customers, businesses can no longer ignore the importance of purchasing materials and services by treating them as non-value-adding transactions. The competitive marketplace demands a new management process using focused concepts and tools to re-evaluate business purchasing behaviour. (Riggs & Robbins 1998)

At this point Supply Chain Management is a methodology to examine all facets of the buying and actual use of purchased materials and services and a new business process designed to maximize the value of money spent on purchased materials and services. (Riggs & Robbins 1998)

Supply Chain Management differs from traditional procurement processes in two major ways: (Riggs & Robbins 1998)

- It is not just buying stuff. It is a process that creates strategies to manage the overall procurement and use of materials or services.
- It is an 'outside-in process'. It is a process that enables the buyer to proactively determine the values that best serve its needs in the marketplace, a radically different approach from issuing bidding requests and reacting to marketplace response.

2.1.3.1 Three elements of Supply Chain management

According to Riggs and Robbins (1998) three platform concepts drive the effectiveness of the supply management work:

1. Market/industry analysis as a lens for supplier selection

2. Value chain mapping as the key to optimising supply-stream effectiveness, with critical standards of measure, including cycle time to use, cycle time to market, and total cost
3. Total cost of ownership as the new comprehensive measure of effectiveness for the supply-stream strategy.

Market analysis is a process which searches the marketplace characteristics to identify suppliers who can satisfy requested needs in a competitively advantaged manner. It permits the supply manager to study market cycles as a way to select suppliers and design a purchasing strategy. Select suppliers who can best meet your needs from a cost and technology standpoint and might mean the difference between choosing leading edge versus trailing-edge technology. (Riggs & Robbins 1998)

One of the market analysis tools is Porter's Industry Analysis Model (Riggs & Robbins 1998), which is based on a five-force view of the marketplace:

– Rivalry among the existing companies
– Bargaining power of customers/buyers
– Threat of new entrants
– Bargaining power of suppliers
– Threat of substitute products or services.

The following Fig. 7 illustrates how each force influences industry competition and lists areas the supply manager should consider during market analysis.

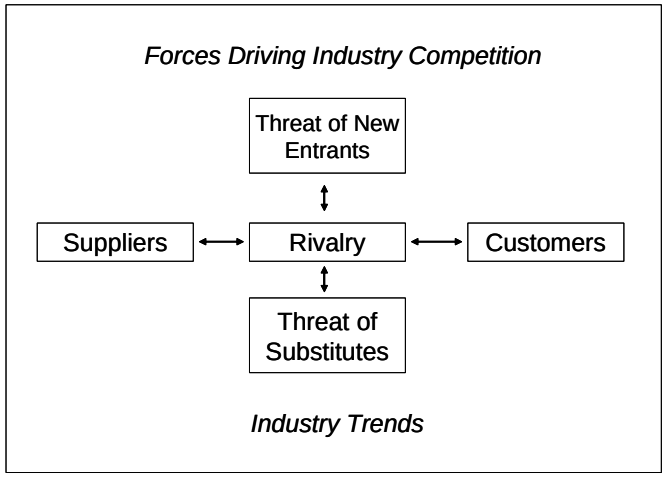

Fig. 7. The Porter Industry Analysis Model. (Riggs & Robbins 1998)

Value chain is a term that denotes a process consisting of a number of related steps with each step adding a certain value to the total outcome. Value chain mapping is a key to unlocking the process gridlock and achieving maximum process effectiveness. From a process flowchart it is possible to recognize three types of work: value-adding, essential, non-value adding. Adding value are the tasks or work steps directly required to create the product or services. Essential are the tasks or work steps necessary to support a function but which are not, as such, directly adding value to the finished product and service. Non-

value adding tasks or work steps are neither necessary nor required to meet cost or quality standards for a given product or service. (Riggs & Robbins 1998)

Fig. 8 illustrates as an example the business value chain.

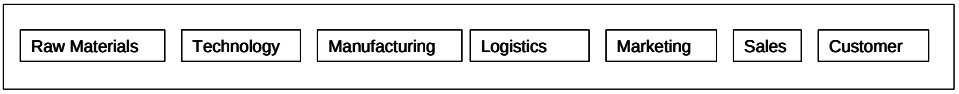

Fig. 8. The business value chain. (Riggs & Robbins 1998)

Many types of costs are associated with the supply stream. The total cost of ownership of the supply delivery system is the sum of all costs associated with every facet of the supply stream. However the simple fact is, no one in the supply chain actually understands the value of all these facets. There are several formulas available to make total cost calculations more real and usable as presented in Fig. 9.

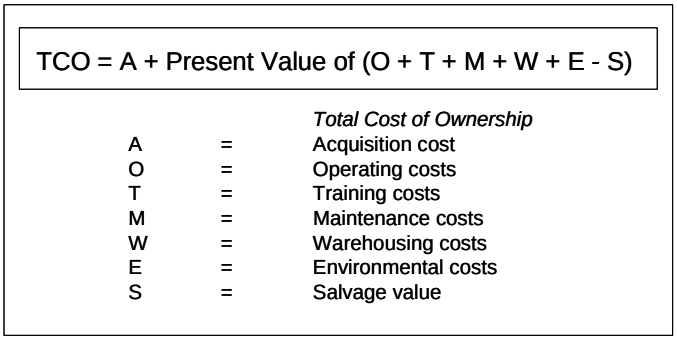

Fig. 9. Total cost of ownership (TCO). (Riggs & Robbins 1998)

Market analysis, value chain mapping, and total cost of ownership are the vital concepts allowing to the link between supplier and customer. As shown in Fig. 10, linking the supplier's value chain to your ultimate customer's is a powerful way of using the collective resources of the supply base to meet your customer's needs. (Riggs & Robbins 1998)

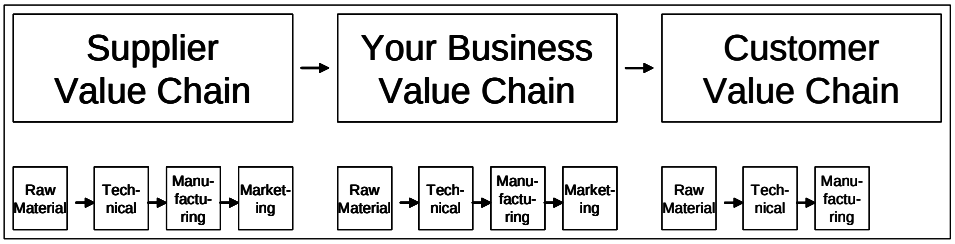

Fig. 10. Linking value chain. (Riggs & Robbins 1998)

2.1.3.2 High-lighting benefits of Supply Chain Management

Supply Chain Management benefits can be grouped in three stages: The supplier consolidation stage, the continual improvement stage, and the innovation stage. (Riggs & Robbins 1998)

The supplier consolidation stage rewards simple volume leverage with a 5-7% reduction in acquisition costs. More cost benefits can be achieved by selecting suppliers that will best optimise the total supply stream, obtaining the front end benefits of price leverage plus the far greater benefits of usage improvement almost immediately. (Riggs & Robbins 1998)

The continual improvement stage is actually changing usage patterns, eliminating inventories, devising new product standards, standardizing application practices, training, etc. Benefits accrue in cash and non-cash terms like actual usage savings, employee time savings and lower inventories. The key is both quantitative and qualitative measurement. (Riggs & Robbins 1998)

The innovation stage can occur at any time. The purpose of the innovation process is to periodically seek out all the hidden opportunities. When such innovation occurs, it creates major shifts in product features or benefits that can generate new revenue for your business or so significantly change your manufacturing or development process as to substantially alter the product cost or dramatically shorten the time-to-market for new products. (Riggs & Robbins 1998)

Fig. 11 summarise the benefits.

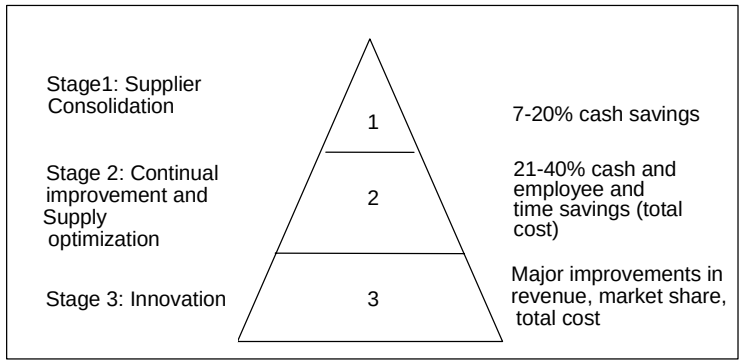

Fig. 11. Supply chain management benefits. (Riggs & Robbins 1998)

2.1.3.3 Measuring effectiveness of supply chain management

Regular and reliable measurements are important in any business activity. Businesses are continually balancing performance, including quality and time, with cost. Measures are intended to be a learning tool to help an organization correct its course and improve performance. The entire measurement process is aimed at not only applying metrics to quan-

tifiable usage data, but also providing indicators about the alignment of supplier values and resources with your own competitive requirements and values. There are three main questions to be answered regarding supply chain management effectiveness (Riggs & Robbins 1998):

1. How effective is the material or service supply-stream strategy in maximizing value for your dollars spent?
2. How effective is the supply management process in implementing that strategy?
3. How effective is that strategy versus your competitors' strategy for the same material /service?

Effective tools for measurements are current state analysis, benchmarking, ask your suppliers' opinion. Supplier satisfaction survey is one way to collect current performance status and ideas how to further develop supply chain. If suppliers are asked to compare our performance to their customers and give even written examples of better satisfied functions, we also get a valuable bunch of ideas as well as data on current status in the market place.

Performance measuring is not any more only a company's internal activity and interest. It is also required externally. For example the TL9000 quality system requires cost and performance based metrics that measure reliability and quality performance of products including the requirement of a customer- supplier communication. (TL 9000 quality system metrics: book one & two 1999)

TL9000 illustrates the data flow and usage. The following Fig. 12 has been simplified to better clarify the customer-supplier relationship from the TL9000 handbook (1999).

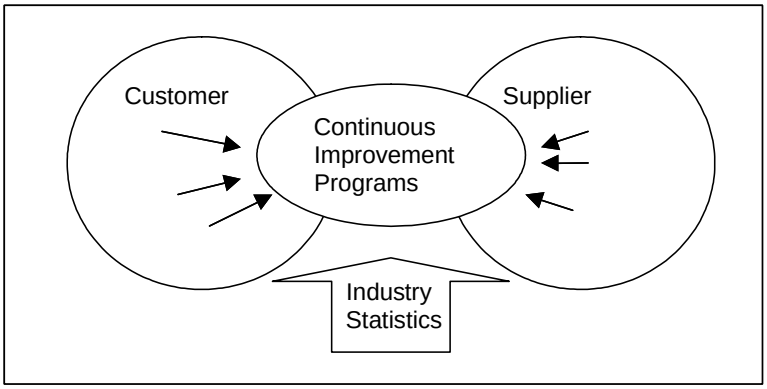

Fig. 12. Simplified TL9000 (1999) Measurement data flow and usage.

The figure presents an environment in which improvement opportunities are identified by customer-supplier exchanges and from the TL9000 information. (TL 9000 quality system metrics: book one & two 1999).

Metrics can be used between supplier and customer to set mutual targets to improve products. This helps build customer and supplier relationships and establishes targets that best meet the needs of both parties.

2.1.4 Other supply chain management approaches

In Chapter 2.1.1-3 some approaches were presented to supply chain management. Supply chain management is easy to adapt in different environments. It gives excellent opportunity to concentrate selected focus areas like e.g. manufacturing, transportation. Or it is a methodology to build up a company-wide approach according to it. In this chapter we will take a look to three other supply chain approaches: partnership, supply management, collaboration, quality management and reverse marketing.

2.1.4.1 Partnership

A purchasing partnership is (Fram & Presberg 1993):

‘Long term agreements between buyers and sellers that reduce conflict and promote mutually beneficial ties between two firms. Using purchasing partnerships, buyers are supposed to receive a continuing stream of quality products or services, while suppliers are assured of a significant portion of buyers' orders. The relationship enables the partners to plan requirements on a mutually beneficial time schedule with mutually satisfactory pricing.’

Fram and Presberg (1993) present areas, which were considered as benefits gained through partnership. By partnership greater business stability, more interpersonal cooperation, improved information flow between supplier and buyer and better timing can be achieved. However strong statements against partnership can be found from the article’s study report such as relationship isn’t ‘equal’. It is the suppliers’ job to keep business mutually profitable. It’s usually the customer who decides the business mode to be partnering without asking if supplier is at all interested in it.

Barrier (1994) continues: Basic to successful partnership is a mutual awareness that both supplier and customer are trying to please each others’ customers. What matters most is awareness of mutual dependence and of the need for satisfaction on both sides.

Chanil (1990) says it briefly, but comprehensively: Partnership: ‘buzzword in ‘90s’. Building a partnership with retailers is more than simply sharing information. It necessitates the fostering of a relationship based on trust.

Partnership is part of supplier relation management. In this study the case empiria hasn’t been limited to the suppliers, which can be considered as a partner of ‘the company’. Suppliers were presenting all kind of relations between two companies, from the off-the-shelf product distributors to partners. Supplier satisfaction is not that way targeted to be privilege and the end result of successful partnership. Also the theory framework around supplier satisfaction cannot be limited by partnership theories.

2.1.4.2 Supply management and collaboration

Supply management covers logistics arrangements between company networks. These company networks can be short or long and either simple or complex. The end result target is however to get supply deliveries on time as agreed. How supply logistics have been arranged has a strong link to both customer and supplier satisfaction.

The above definition limits supply management as a part of the manufacturing and delivery phase of the supplier value chain. Supply chain management is considered to be a developed, extended mode of supplier management, when also product development as well as requirement management has been taken into account. Supply chain comes into the picture when products are developed and designed for smooth throughput of the supply chain. Material and supplier selections have been made understanding the manufacturing requirements and logistics.

The supply chain remains an enigmatic spiderweb of people and processes, despite slow and steady improvement in the links that connect its modes – retailers, manufactures and suppliers (Smith 2003). Collaboration is described in many articles for example by Varghese (2003), Smith (2003) and Harreld (2001) as a computer/internet assisted real time visibility through the supply chain. Ozzie (2002) talks about collaborative technology defined as interact-online. Empirically–collaborative technology has substantive value in reducing the cost of coordination by providing shared awareness across differences in space and time (Ozzie 2002). In supply chain management solutions focus on providing more real-time data from all links in the chain (Harreld 2001). Even the benefits of collaboration to boost the real-time online visibility has its challenges, both cultural and technical (Harreld 2001).

In order to maximize value, both in the short and long term, a company should adapt a portfolio approach to collaboration choosing the set of tools most relevant to its supply chain ecosystem. The key is to look at these as strategies in what they aim to do and not in the technologies they will employ. (Varghese 2003)

Varghese (2003) presents the following portfolio for collaboration strategies:

- Public e-marketplace
- Privat trading hubs
- Joint family and
- Big Brother,

which are based on two factors: competitive overlap and power. Public e-marketplaces are relevant only for commodity-like products or services where there is significant overlap among supply chains and the power they hold over the buyer in minimal. The only benefit for suppliers is access to a wider customer base. The private trading hub is for the player who has significantly higher power and they may decide to form a private trading hub and thus keep competition out. This approach gives the benefits of increased efficiency. (Varghese 2003)

Companies that do not have any competitive overlap in the supply chain could have direct connections to maximize collaborative opportunities. Such collaborative opportunities exist in inventory management and planning, product design, shipping, production planning and scheduling. The primary benefit of a joint family approach is gaining vertical integration without the downside of financial ownership. Big brothers have the biggest power in a supply chain and they use the power to ensure maximize efficiency across the

supply chain. While big brothers benefit from building deep collaboration with their suppliers, similar to joint families, they can also ensure that enough safeguards are built in. (Varghese 2003)

In this study collaboration is considered as part of supply chain management and that way it has also link to supplier satisfaction. In a supplier satisfaction survey, which is presented later in detail in this book, supply management and collaboration has been measured mainly to show how well tools and processes work. As highlighted in the articles analysed in this chapter, the collaboration is strongly linked to technologies and processes around information sharing. However seamless collaboration with complete information sharing between all supply chain participants is still in the future (Varghese 2003).

2.1.4.3 Quality Management

By implementing JIT (Just in time) and TQM (Total quality Management) programs, industrial firms are concentrating their purchases among fewer vendors to reduce costs and to improve quality. The literature on these partnership arrangements does not give equal weight to the reactions of both suppliers and buyers. As might be expected, most of it centres on buyer satisfaction since customers are the central focus of TQM programs and customer oriented organisations. (Fram & Presberg 1993)

Design to distribution – aiming to be the best of the best by Rafferty (1995) presents another quality motivated model covering ten elements, which are called success factors. These factors are:

- Leadership based on self-assessment.
- Policy and strategy based on frequent feedback collected from suppliers and customers.
- People Management with keyword effectiveness.
- Resource (Material) Management performance is measured by benchmarking.
- All processes support the delivery of products and services to customers.
- Self-assessment plays a major role in process reviews. Several measurement techniques are used.
- Customer Satisfaction where the key is managing the ‘delight factor’
- People Satisfaction measured by staff turnover and absenteeism.
- Impact on society with a keyword environment.
- Business Results, the ultimate goal!

Also quality systems in specific industry area, e.g. car and telecommunication industries, are requesting more and more supplier relation-related issues. Telecommunication suppliers have established The Quality Excellence for Suppliers of Telecommunications Forum (QuEST Forum), which has defined the TL9000 quality system for the telecommunications industry. (TL 9000 quality system metrics: book one & two 1999)

To conclude, Quality Management is driving companies toward customer satisfaction, which is not the same as supplier satisfaction.

2.1.4.4 Reverse marketing

Reverse marketing is changing the conventional buyer-seller relationship. It is used both to acquire materials and to acquire technology. This proactive behaviour of industrial procurement people is a departure from the stereotypically passive purchasing agent. Procurement people are adopting a new approach in the performance of their jobs and in their roles within the organization. The traditional supplier-purchaser relationship: supplier is initiative and in reverse marketing purchaser is initiative! Fig. 13 illustrates the difference between traditional and reverse marketing. (Blenkhorn & Banting 1991)

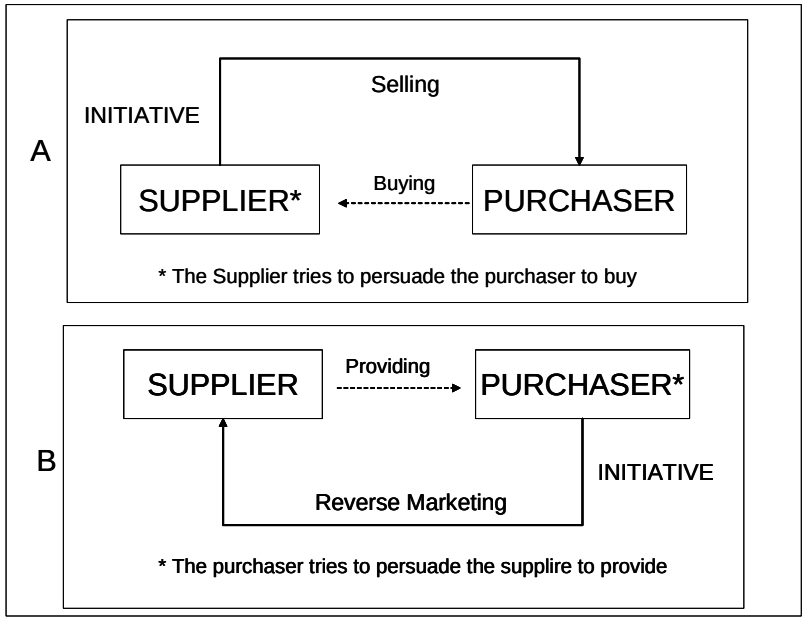

Fig. 13. Traditional (A) and Reverse Marketing (B) Relationships (Blenkhorn & Banting 1991)

Reverse Marketing is an aggressive and imaginative approach to achieving supply objectives. The purchaser takes the initiative in making the proposal. The goal is to satisfy both short- and long-term supply objectives. Requires close work with an existing or a new vendor. Two key words are "initiative" and "persuasion".

The rewards are many. It may permit the achievement of seemingly impossible objectives in terms of quality, quantity, price, delivery and service. It is more than just a technique or tool. It represents a different perspective on the role of supply. (Blenkhorn & Banting 1991)

Reverse Marketing is a good example of the increasing importance to develop sourcing activities, as supplier satisfaction measurement can be considered too.

2.1.5 Supplier Satisfaction as a part of supply chain management

In the following the two limited views towards supplier satisfaction is presented from earlier studies.

2.1.5.1 Supplier Satisfaction and buyer-supplier relationship barriers

Lascelles and Dale (1989) have presented in their article the main barriers that hinder the development of an effective buyer-supplier relationship. These barriers have been defined according to survey results from the car industry. (Lascelles & Dales 1989)

1. *Poor Communication and feedback*: Communication between buyer and supplier has been taken too often for granted, "no news is good news".
2. *Communication of requirements*: The supplier must be given the opportunity to understand the function of the part it is to supply and to discuss design details before they are finalized, particularly with regards to the manufacturability of parts. This could be understood also as an Early Supplier Involvement (ESI) (Burt D 1989).
3. *Customer credibility*: Failure to respond to supplier requests for information or feedback on specification requirements, components functionality, and so on is a way in which purchaser credibility can seriously be undermined.
4. *Purchasing power*: Purchasing power is a major issue in the buyer-supplier relationship. Companies with considerable purchasing power may well improve the quality of purchased items, but will not necessarily achieve lasting benefits of cost-effective quality management to satisfy all customers.

2.1.5.2 Supplier Satisfaction and loyalty

Harald Biong (1993) has studied Satisfaction and Loyalty to Suppliers within the Grocery Trade. He has defined loyalty, satisfaction and satisfaction and loyalty as the following. Loyalty is a focal point in a long-term relationship, implying both a favourable attitude and customer relation. Satisfaction evolves as a consequence of one party's experience with the other's ability to fulfil norms and expectations. When combining those two the relationship between supplier and retailer should be seen in a long-term perspective. The greater the satisfaction with the supplier, the more loyal the retailers are expected to be. However, the satisfied customer isn't necessary loyal.

According to Biong´s (1993) model also sales force, product (including quality, brand, product line), profitability and support have a strong impact on satisfaction and loyalty.

2.1.6 Supplier Satisfaction Elements

Supply chain management has been built up by steps. Every step has had a certain need in order to improve supply chain performance. This need could have been both internal or external. The next step is to integrate supplier, manufacturer and customer's processes in order to be able satisfy evermore demanding customers and do that successfully in business. Supplier Satisfaction measurement has become a topical issue to improve own processes by having working relations with suppliers.

In the previous chapters supply chain management and its elements, which could have also an effect on supplier satisfaction has been reviewed. The history review and development of Supply Chain Management elements clearly point out the supplier satisfaction concept to be a part of supply chain management. Porter's Industry model, Riggs and Robbins business value chain and the total cost of ownership (Riggs & Robbins 1998) links the value chains together and the importance of each of them, including the supplier value chain. Business value chain thinking has benefit both in *money* and *time*, which can be considered as elements of the supplier satisfaction concept also.

Other earlier reviewed approaches for supply chain management, which have links to supplier satisfaction, are partnership, supply management and collaboration, quality and reverse marketing. Partnership brings out elements like *long-term relationship* and mutual awareness (*communication*). Supply management & collaboration concentrated on logistics and information sharing, and tools & technologies around the topic. Quality approaches concentrate on reducing the number of suppliers and improving quality with fewer suppliers resulting in reduced cost and more satisfied customers. So *quality*, as such, can be considered as a supplier satisfaction concept element. Reserve-marketing point out *purchaser initiative*, which is also a clear approach in the supplier satisfaction concept.

From the existing articles and reports, which have been presented in this chapter earlier, concept elements can be summarised and supplier satisfaction pointed out. These elements in addition to the above are *trust, commitment, innovation* and *flexibility.* So far public literature has presented very little on the concept of supplier satisfaction. Usually articles or studies concentrate on a certain theme as presented earlier like loyalty, attitude, etc.

Money, time, long-term relationship, communication, quality, trust, commitment, innovation and flexibility are the elements of the supplier satisfaction concept that current literature offers for this study.

2.1.7 Summary of key definitions used in this study

Satisfaction. A positive affective state resulting from the appraisal of all aspects of a firm's working relationship with another company. (Anderson & Narus 1984)

Supply Chain Management. The manufacturer and its suppliers, vendors, and customers – that is, all links in the extended enterprise – work together to provide a common product and service to the marketplace that the customer *desired and* is willing to pay for *throughout the life cycle of the product and service*. This multi-company group, function-

ing as one extended enterprise, makes optimum use of shared resources (people, processes, technology, and performance measurements) to achieve operating synergy. The result is a product and service that are high quality, low-cost, and delivered quickly to the market place *and achieves customer satisfaction*. (Kuglin 1998)

Supplier Satisfaction. Supplier satisfaction has been considered in this study as implementing the supply chain without any advance consequences. It is not limited to any kind of supplier relationship type or other limiting factors or conditions in business relations. As a result of this study supplier satisfaction has been defined in more detail and on the practical level including concept/framework, elements and measurement as a management tool.

2.2 Supplier satisfaction measurement

The next chapter will broaden the view to supplier satisfaction measurement and how it could be analogous with customer satisfaction measuring and the 360° feedback model. The following chapters are used mainly for the survey creation by understanding the theories and building up commonalities between supplier satisfaction measurement and customer satisfaction as well as supplier satisfaction and the 360° feedback model. The literature references presented are selected to support the best implementation phase of the study by giving the theoretical background for the action chosen and taken. This has led to the fact that in some parts of this section the number of references is small, but at the same time it keeps the theoretical approach in a more consistent form.

2.2.1 Analogy to customer satisfaction

Hayes (1998) has created a general model for the development and use of customer satisfaction questionnaires. Fig. 14 illustrates the model.

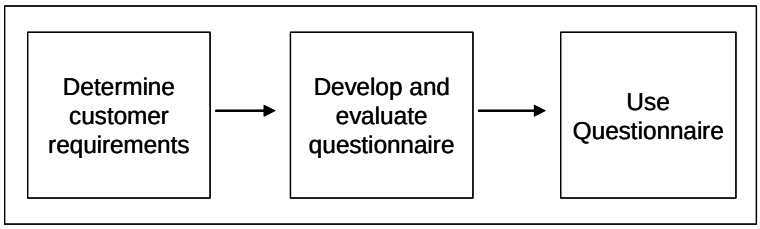

Fig. 14. A general model for the development and use of customer satisfaction questionnaires. (Hayes 1998)

The first step in the process is to identify customer's requirements or quality dimensions, the important characteristics of the product or service. Customer requirements define the quality of products or services. (Hayes 1998)

Knowledge of customer requirements is essential for two reasons:

- It provides a better understanding of how customers define the quality of products or services. And the better one understands the requirements the better position one has to satisfy customers.
- Knowledge of customer requirements will facilitate the development of a customer satisfaction questionnaire.

Marketing research is a method to systematically define customer requirements. It is the systematic gathering, recording, processing, and analysing of marketing data, which will help the company to uncover opportunities and to reduce risks in decision-making. (Dillon *et al.* 1990)

Marketing research has been conducted for over 100 years. However the 1910-1920's is usually recognized as its formal beginning. Then the first companies devoted exclusively to marketing research appeared. During the 1920-1930's research departments became more common in all types of organization. The post-war (2^{nd} World War) period brought with it a boom in research companies and rapid advances in research methodology, especially in quantitative techniques and computer technology. (Dillon *et al.* 1990)

Regardless of the primary objective of a business, satisfactory profits must be obtained if the business is to remain financially viable in the long run (Dillon *et al.* 1990). Marketing research is helping to understand customer needs and company development in order to better satisfy customers.

What kind of role has supplier satisfaction then? To develop a business effectively is not possible if the customer needs are not known as described above. Today there are several companies only producing world-wide marketing information. The biggest companies have their research departments. Market data and customer needs/requirements are more or less available and visible.

Supplier satisfaction is coming next as a tool to improve the competitiveness of companies. The value chain figure (Fig. 9) shows that integration of supplier's value chain to 'your business' value chain has not happened yet. Supplier satisfaction measurement gives us opportunity to develop supplier relations in a way that both parties are willing and capable to do it. This approach is supported by Wong (2000). Wong's (2000) study explores the role of suppliers in improving customer satisfaction and finds that companies can make use of their suppliers in achieving high customer satisfaction. He (Wong 2000) states that companies need to integrate supplier satisfaction with customer satisfaction.

In the following chapters customer satisfaction measurement is presented in theory. As the ultimate purpose of customer satisfaction and supplier satisfaction is to create profitable business, an analogous approach can also be found for supplier satisfaction measurement.

2.2.2 Determining Customer Requirements

Market researching is one systematic method for defining customer requirements. There are also other approaches. The alternatives do not override each other but every case has its own best method to support the case. In this chapter two methods are presented: the quality dimension and the critical incident approaches. Both methods are also later used in this study when defining the questionnaire.

2.2.2.1 Quality dimension approach

Products or services are usually described in terms of dimensions or characteristics. For example, after receiving a service, we might describe the service provider as fast, always available when needed, and unpleasant. These descriptions represent three different aspects of the service: responsiveness, availability, and professionalism, respectively. The composite of all possible dimensions describes the entire product or service (Hayes 1998)

Customer requirements could be regarded as those characteristics of the product or service that represent important dimensions. They are the dimensions on which customers base their opinion about the product of the service. Bob Hayes (1998) uses the term quality dimensions to describe these important dimensions. (Hayes 1998)

The purpose of determining customer requirements is to establish a comprehensive list of all the important quality dimensions that describe the service or product. It is important to understand the quality dimensions so that you will know how customers define the quality of your service or product. Only by understanding the quality dimensions it is possible to develop measures to assess these quality dimensions. Although there are some standard quality dimensions that generalize across many product or services, some dimensions will apply only to specific types of products or services. These standard quality dimensions, which are applicable in many organisations, include availability, responsiveness, convenience, and timeliness. (Hayes 1998)

2.2.2.2 A critical incident approach

A critical incident is an example of organizational performance from the customers' perspective. A critical incident is a specific example of the service or product that describes either positive or negative performance. A positive example is a characteristic of the service or product that the customer would like to see every time he or she receives that service or product. A negative example is a characteristic of the service or product that would make the customer question the quality of the company. (Hayes 1998)

A good critical incident for defining customer requirements has two characteristics:

1. It is specific.
   A critical incident is specific if it describes a single behaviour or characteristic of the service or single characteristic of the product. The incident should be written so that different people interpret it in the same way. For example: I waited in line for a long time. Or the teller was quickly serving her customers.
2. It describes the service provider in behavioural terms or describes the service or the product with specific adjectives.

A critical incident should also focus on the behaviour of the service provider or specific adjectives that describe the service or product. For example: The teller carefully listened to my request. Or I received immediate service for my transaction. (Hayes 1998)

A critical incident approach procedure involves two steps: Interview and categorization. First customers are interviewed to obtain specific information about the service or product. Then this information is categorized into groups, each reflecting a quality dimension. As a result we get a hierarchical relationship between customer requirement, satis-

faction items and critical incidents from the method. The incidents define the satisfaction items, and the satisfaction items, in turn define customer requirements. The following Fig. 15, illustrates these hierarchical relationships. (Hayes 1998)

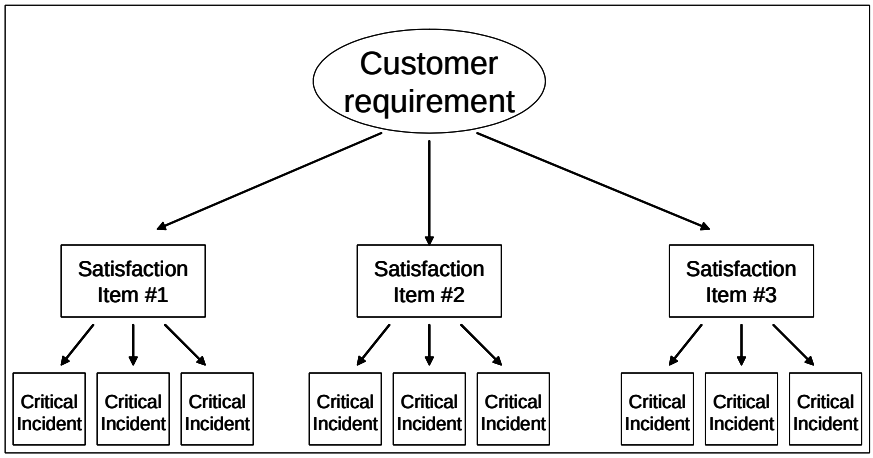

Fig. 15. Hierarchical relationship among critical incidents, satisfaction items, and customer requirements. (Hayes 1998)

2.2.3 Reliability and validity

When constructing a questionnaire that assesses customer attitudes and perceptions toward customer requirements, it is necessary to consider measurement issues to ensure that scores derived from such instruments reflect accurate information about these underlying constructs. Two important measurement issues to consider when developing the questionnaire are reliability and validity. (Hayes 1998)

2.2.3.1 Reliability

Reliability is defined as the extent to which measurements are free from random-error variance. Random error decreases the reliability of the measurement. Because the exact degree of true variance and error variance can never be known, it is impossible to directly calculate the level of reliability for the set of scores. What can be done is to estimate reliability. There are different methods available of for estimating reliability depending on what type of measurement error we want to examine. Typical reliability classes are stability, equivalence and internal consistency. (Hayes 1998)

An index of reliability to assess the stability over time is referred to as test-retest reliability. This index of reliability is essentially the correlation between the survey scores for time1 and time2. It is possible to administer the same survey at two different times to the

same set of people. However the stability of customer satisfaction over time (might) depend on the time interval between the administrations of the survey. For example, if the time between two surveys is short customers might remember the first answers and just duplicate the answers, or in the first survey customer has had the product for a month and in the next survey a year, then the experiences could be totally different. With customer satisfaction surveys, test-retest reliability is not commonly calculated due to the difficulty in designing a survey process that allows for the administration of the survey to the same set of individuals across two time periods. (Hayes 1998)

An index of reliability to assess the extent to which scores are free from the error associated with a particular set of items is referred to as parallel forms reliability. For this form of reliability, two equivalent forms of survey designed to measure the same construct are compared. For example it is possible to develop two different surveys of service quality, each survey containing slightly different questions to measure the same underlying construct of interest (Hayes 1998)

Internal consistency is concerned with the degree to which the items in the survey are measuring the same thing. For example, in the customer survey, some items could be combined to get a single score of some quality dimension. The items that are combined should be assessing the same thing. If the items were not measuring the same thing, then the overall score would be meaningless. To the degree that the items in the survey are measuring the same thing, we have little measurement error. (Hayes 1998)

When measuring customer perceptions and attitudes, the scores are wanted to be highly reliable for that particular scale. This ensures that the observed scored derived from that measure reflects the true levels of customer attitudes. Furthermore, to be confident that the highly reliable measure will be able to distinguish between people who have a positive attitude and those who have a negative attitude. Although reliability of the scale is crucial, it is not enough in determining the quality of a measure. The other issue to be considered is validity. (Hayes 1998)

2.2.3.2 Validity

Validity refers to the best approximation to the truth or falsity of a proposition, including propositions concerning cause-and-effect relationships. (Dillon *et al.* 1990)

Internal validity examines whether the experimental manipulation (the treatment conditions) actually handles the differences observed in the dependent variable. Control is a key requisite in demonstrating internal validity. Laboratory experimental settings offer greater internal validity than do field experimental settings. (Dillon *et al.* 1990)

External validity refers to whether the research findings of a study (cause-and-effect relationships) can be generalized, to and across, populations of persons, settings and times. In essence, external validity asks the question; to what extent do samples represent the population? Because of realism, field experimental settings offer greater external validity than do laboratory experimental settings. (Dillon *et al.* 1990)

2.2.4 Questionnaire Construction

2.2.4.1 Survey types and data-collection methods

Surveys can be classified in many different ways such as by the size and type of sample (local, state, national basis). They can also be classified on a temporal basis; for example, a survey can be distinguished according to whether a cross-sectional or longitudinal approach is adopted. Cross-sectional surveys collect informative data from a number of different respondents at a single point in time. Longitudinal surveys, on the other hand, question the same or different respondents at different points of time, examining the changes that occur with the passage of time. Alternatively, surveys also can be classified according to the interviewing method that is employed. (Dillon *et al.* 1990)

The next step is to choose a suitable data-collection method. There is a wide array of data-collection methods available and also in use. In this chapter is briefly presented direct, also called cold mail surveys, mail panels, telephone surveys, personal in-home (or door-to-door) surveys and mall-intercept interviewing.

Mail surveys involve sending out a fairly structured questionnaire to a sample of respondent. Surveys are typically mailed directly to the respondent, and the completed questionnaire is returned by mail to the firm conducting the study. *Direct/cold mail surveys* involve mailing questionnaires to a group of individuals who have not agreed in advance to participate in the study. *A mail panel* consists of large and nationally representative samples of households that have agreed to periodically participate in mail questionnaires, product tests, and telephone surveys. Households that agree to participate in the mail panel are often compensated for their time and effort. (Dillon *et al.*1990)

Telephone surveys involve phoning a sample of respondents drawn from an eligible population and asking them a series of questions. The use and percentage of dollar budgets allocated to telephone interviewing continues to increase, and it is still the most frequently used data collection method. (Dillon *et al.* 1990)

The personal in-home survey involves asking questions from a sample of respondents' face-to face in their homes. In the case of in-home personal surveys the responsibilities of the interviewer are to (1) locate the appropriate sample of respondents, (2) ask them a set of questions, and (3) record their responses. The trend of using personal in-home surveys is decreasing. (Dillon *et al.* 1990)

A mall-intercept personal survey involves a central location test facility at a shopping mall where respondents are intercepted while they are shopping. This type of data collection method is, and has been, extremely popular for the last 20-25 years. (Dillon *et al.* 1990)

Each of the alternative data collection methods are compared with respect to the criteria described below. (Dillon *et al.* 1990)

1. Complexity and versatility
   Complexity refers to the extent to which the format of the data collection must be simple and straightforward. Versatility refers to the extent to which the data collection method can handle different question formats and scenarios.

2. Quantity of data
   Quantity of data refers to the amount of information that can be safely collected with the use of a particular type of data collection technique.
3. Sample control
   Sample control refers to the ease or difficulty of ensuring that an element of the target population can be identified and further that he or she will be the one who responds to the data collection instrument.
4. Quality of data
   Quality of data refers to the accuracy of the data colleted using a particular data-collection method.
5. Response rate
   Response rate refers to the percentage of the total numbers of respondents contacted who cooperate and complete the questionnaire.
6. Speed
   Speed refers to the total time it takes to complete the study using a particular data-collection method.
7. Cost
   Cost refers to the total expenditure required to collect the necessary data using a particular data collection method.
8. Uses
   Uses refer to the primary types of studies that rely on a particular data collection method.

In the following table 1 the above criteria are presented in each earlier presented survey types. One interesting detail is response rate, which is pretty low, 10-20% in direct/ cold mail surveys.

Table 1. Summary comparison of major data collection. (Dillon et al. 1990)

Criteria	Direct/cold mailing	Mail panels	Telephone	Personal in-home	Mall intercept
Complexity and versatility	Not much	Not much	Substantial but complex or lengthy scales difficult to use	Highly flexible	Most flexible
Quantity of data	Substantial	Substantial	Short, lasting typically between 15 and 30 minutes	Greatest opportunity	Limited 25 minutes or less
Sample control	Little	Substantial, but representativeness may be a question	Good, but nonlisted households can be a problem	In theory, provides greatest control	Can be problematic; sample representativeness may be questionable
Quality of data	Better for sensitive or embarrassing questions; however, no interviewer present to clarify what is being asked		Positive side, interview can clear up any ambiguities, negative side may lead to socially accepted answers	In addition, there is the chance of cheating	In addition, unnatural testing environment can lead to bias
Response rates	In general, low as low as 10%	70-80%	60-80%	Greater than 80%	As high as 80%
Speed	Several weeks; completion time will increase with follow-up mailings	Several weeks with no follow-up mailings, longer with follow-up mailings	Large studies can be completed in 3 to 4 weeks	Faster than mail but typically slower than telephone surveys	Large studies can be completed in a few days
Cost	Inexpensive; as low as $2.50 per completed interview	Lowest	Not as low as mail; depends on incidence rate and length of questionnaire	Can be relatively expensive, but considerable variability	Less expensive than in-home, but higher than telephone; again, length and incidence rate will determine cost
Uses	Executive, industrial, medical and readership studies	All areas of marketing research; particularly useful in low-incidence categories	Particularly effective in studies that require national samples	Still prevalent in product testing and other studies that require visual cues or product prototypes	Pervasive-concept tests, name tests, package tests, copy tests

During the last ten years sophisticated computer technology has been introduced and integrated into existing services to create more flexible, easier-to-use, and more accurate

data-collection methods. Computer-assisted interviewing has fast become a dominant force in collecting data from respondents. (Dillon *et al.* 1990)

Web-based surveys have become a widely used method in the last years. Also several studies to understand advantages and weaknesses of a web-page survey, and learn how to optimise the use of web-paged survey have been conducted recently.

Gunn (2003) has divided Web-based surveys into non-probability and probability – based surveys. Non-probability consists of questionnaires that request a vote on a particular question and other instant polls. These surveys do not lead to generalizations of viewpoint across populations. Probability-based surveys are often used for customer satisfaction surveys. However non-response is a big concern with this type of Web survey.

Boston University web (2003) presents three methods to administer web-based surveys. These methods differ in two areas: the survey's respondents and survey's data. The methods are:

1. *Publicly administered and anonymous*. The target is that anybody can be able to take the survey, no special restrictions have to be in place
2. *Restricted audience and anonymous.* Only difference to method one is the possibility to limit potential respondent.
3. *Restricted audience and non-anonymous respondent.* Potential respondents have been invited to the survey. The survey is also often protected by a login name and password.

Many advantages of web-based surveys can be found. One of the main advantages is cost effectiveness. Web-based surveys can be considered two to three times cheaper than paper surveys. Other advantages are a faster response rate, easier to send reminders to participants, easier to process data, the ability to make complex skip pattern questions easier to follow, the inclusion of pop-up instructions for selected questions etc. (Gunn 2003)

Gunn (2003) continues will concerns of web-based surveys:

1. Questionnaires do not look same in different browsers and on different monitors. For the same question respondents receive different visual stimuli.
2. Respondent may have different levels of computer expertise. Lack of computer expertise can be source of error or non-response.
3. The surveyor is faced with concerns about data security on the server.
4. Respondent privacy of the entered data might be a concern. The surveyor can determine the time of the day the survey was completed, how long it took the respondent to answer the each question, what browser was used and respondent IP address.

Several studies have found that Internet surveys have a significantly lower response rate than comparable mailed surveys (Solomon 2001). The following factors has been identified to increase the response rates: personalized email cover letters, follow up reminders, pre-notification of the intent to survey and simpler formats. A relatively high percentage of potential respondents stopped completing the surveys when encountering the first question, when encountering the complex question grid and when asked to supply their e-mail address.

2.2.4.2 Measurement scaling

In the previous chapter were presented different types of surveys and data collection methods. This chapter will concentrate on the theory and application of measurement techniques. Because the information collected will be analysed, numbers must be assigned to the responses to the questions that are asked. These numbers have important implications in terms of how the answers to questions can be interpreted and analysed. Thus we need to understand the properties of the various scaling techniques and the proper way to use them. (Dillon *et al.* 1990)

The most important and critical aspect of measurement is specifying the rules for assigning numbers to the characteristics to be measured. Measurement can be undertaken on different levels. The levels reflect the correspondence of the numbers assigned to the characteristic in question and the meaningfulness of performing mathematical operations on the numbers assigned. There are four basic types of measurement levels: Nominal, Ordinal, Interval and Ratio Measurement. (Dillon *et al.* 1990)

1. Nominal measurement
   Nominal data provide a system that 'maps' an object to a number; in other words, a number is assigned that identifies a specific object. For example, a person's telephone number and social security number are nominally scaled data.
2. Ordinal measurement
   Ordinal-scaled data are ranked. Measurements in which the response alternatives define as ordered sequence so that the choice listed first is less (greater) than the second, the second less (greater) than the third, and so forth. The number assigned does not reflect the magnitude of the attribute possessed by an object.
3. Interval measurement
   Measurement that allow us to tell how far apart two or more objects are with respect to the attribute and consequently to compare the difference between the numbers assigned. Because the interval data lack a natural or absolute origin, the absolute magnitude of the numbers cannot be compared.
4. Ratio measurement
   Ratio scaled data have the same properties as interval scaled data, but with one important difference. Ratio data possess a natural or absolute origin.

Next two general types of measurement scales will be presented: comparative and non-comparative. In comparative scaling the subject is asked to compare one set of stimulus objects directly against another. On the other hand, in non-comparative scaling the respondent is asked to evaluate each object on a scale provided independently of the other objects being investigated. (Dillon *et al.* 1990)

Comparative scales ensure that all respondents approach the rating task from the same known reference point. There are several commonly used comparative scales available such as paired comparison, dollar metric comparison, rank-order scales, constant sum scales etc. A paired comparison scale presents the respondent with two objects at a time and asks the respondent to select one of the two according to some criterion. The dollar metric scale (graded paired scale) is an extension of the paired comparison method by asking respondents to indicate which brand is preferred and how much they are willing to pay to acquire their preferred brand. (Dillon *et al.* 1990)

Next to paired comparison scales, the most widely used comparative scaling technique is simple rank-order scaling. With a rank-order scale, respondents are presented with several objects simultaneously and requested to ‘order’ or ‘rank’ them. Another popular technique is the constant sum scale, a procedure whereby respondents are instructed to allocate a number of points or chips among alternatives according to some criterion, for example preference, importance and so on. (Dillon *et al.* 1990)

With no comparative rating scales, the respondent is not instructed to compare the object being rated against either another object or some specified standard. Thus, in rating a specific brand, the respondent assigns the rating based upon whatever standard is appropriate for the individual; the researcher has not provided it. In case of itemized scales the respondent is provided with a scale that has numbers and/or brief descriptions associated with each category and is asked to select one of the limited number of categories, ordered in terms of scale position, that best describes the object under study. Itemized rating scales can take on many different formats depending upon the number of categories, the nature and degree of the verbal description, the number of favourable and unfavourable categories, the presence of a neutral position and the forced or no forced nature of the scale. In the following Fig. 16 are illustrated several different types of itemized rating scales. (Dillon *et al.* 1990)

Fig. 16. Several different types of itemized rating scales. (Dillon *et al.* 1990)

There is still one element to add when discussing measuring and measuring scales: Attitude. Attitudes are presumed to be a precursor of behaviour. Attitudes are thought to

reflect a person's beliefs and in some sense to determine that person's ultimate behaviour. One problem when dealing with attitudes, however, is that the term means different things to different researchers. (Dillon *et al*. 1990)

Several types of scaling techniques have been employed to measure a person's overall evaluation of an object. Four popular scaling techniques are single-item format scale, Likert-scale, semantic scales and staple scales. (Dillon *et al.* 1990)

1. Single-Item Formats
   Single-item measures involve asking the respondent to make a judgement about the object in question. Typically single-item measurement scales use a verbal, self-report, no forced format. Itemized rating scales are frequently employed.
2. Likert Scales
   Scaling technique where a large number of items that are statements of beliefs or intentions are generated. Each item is judged according to whether it reflects a favourable or unfavourable attitude toward the object in question. Respondents are then asked to rate the attitude object on each scale item of five-point category labelled scale as presented in following Fig. 17.

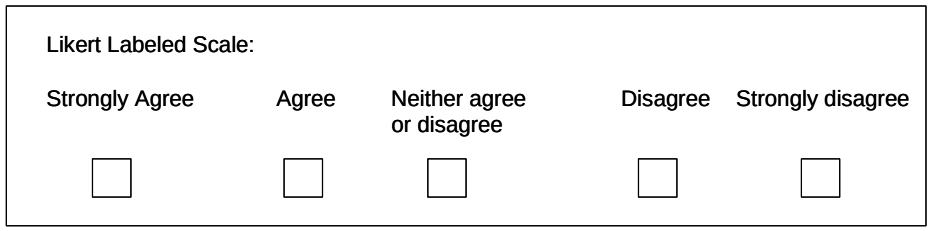

Fig. 17. Likert labelled scale. (Dillon *et al.* 1990)

3. Semantic Differential
   Scaling technique where a measure of the person's attitude is obtained by rating the object or behaviour in question on a set of bipolar adjective scales. The typical procedure involves identifying 5 to 10 bipolar adjective scales that are associated with an evaluative dimension. Responses to each evaluative bipolar adjective scale are scored from +3 to –3 (or from 1 to 7), with positive (or high) values reflecting favourable evaluations. For example to measure reactions to a new type of shaving cream and usage of it, it is possible to use the following semantic differential scale: 'good – bad', pleasant – unpleasant', useful – useless', beneficial – harmful', and 'attractive – unattractive'.
4. Staple Scales
   A modification of the semantic differential scale, the staple scale uses a single criterion or key word and instructs the respondent to rate the object on a scale from, for example, 'does not describe' to 'describes completely'. This type of scale may be useful in situations in which the respondent can like the object, but can dislike a certain aspect of it.

The attitude scaling technique arrives at a single attitude score based upon responses to statements of beliefs or intentions. This 'scale' measures attitude toward a product, object or behaviour. (Dillon *et al.* 1990)

2.2.4.3 Questionnaire design

A critical element in a survey research study is the construction of a properly designed questionnaire. A questionnaire is simply a data collection instrument that sets out the questions designed to elicit the desired information in a formal way. Faulty questionnaire design is a major contributor to sampling errors and especially to response errors. The questionnaire continues the research process that began with identification of the management problem, specification of the information needed to solve this problem, selection of the appropriate method for collecting the necessary data, and identification of the target population of individuals who can provide the needed information. (Dillon *et al.* 1990)

Questionnaire design can be viewed in terms of four interrelated activities: preliminary considerations, asking questions, constructing the questionnaire, testing the questionnaire. (Dillon *et al.* 1990)

Step 1: Preliminary considerations

The first job is to identify exactly what information is required. In a satisfaction survey this means revisiting satisfaction items. After that comes consideration of who are the target respondents and what is the data collection method. (Dillon *et al.* 1990)

Step 2: Asking questions

When constructing a questionnaire a general rule is to always ask yourself, 'why am I asking this question?' You must be able explain how each survey question is closely related to the research question that underlies the original information that is required. Another important thing is questionnaire wording, which is a crucial element in maximizing the validity of survey data. (Dillon *et al.* 1990)

Step 3: Constructing the questionnaire

The next step is to arrange the questions in a form that provides meaningful results in a cost- and time efficient manner. There are two general types of response formats: open ended and itemized (closed ended). With an open-ended question format the respondent is free to choose any response deemed appropriate, within the limits implied by the question. In the itemized (closed-ended) question format the respondent is provided with numbers and/or predetermined descriptions and is asked to select the one that best describes his or her feelings. When using itemized questions it is important to define an appropriate number of response categories and category descriptions. (Dillon *et al.* 1990)

Whether the question format is either open-ended or itemized, the questionnaire should appear as a logical, carefully thought out examination. Starting with evaluative questions to diagnostic questions and finally ending up with classification questions. (Dillon *et al.* 1990)

Many respondents will have some initial suspicions or fears concerning why they are being interviewed. The introduction should be brief. It should explain the purpose of the questionnaire and provide instructions for completing the questionnaire. (Hayes B E 1998)

Step 4: Testing the questionnaire

Pre-tests are indispensable aids for developing good questionnaires. A thorough pretest examines the potential for both respondent and interviewer error. (Dillon *et al.* 1990)

As a conclusion questionnaire design and field execution are critical elements in survey research. Both knowing how to ask a set of questions properly and knowing how to construct a questionnaire effectively are necessary activities to ensure that the desired information will be collected as efficiently as possible. (Dillon *et al.* 1990)

2.2.5 360° feedback model

2.2.5.1 360° feedback –what is it? –

The 360° feedback process involves collecting perceptions about a person's behaviour and the impact of that behaviour from the person's boss or bosses, direct reports, colleagues, fellow members of the project teams, internal and external customers, and suppliers. Other names for 360° feedback are multi-rater feedback, multisource feedback, full-circle appraisal, and group performance review. (Lepsinger & Pfeiffer 1997)

In the following Fig. 18 traditional feedback is compared against 360° feedback.

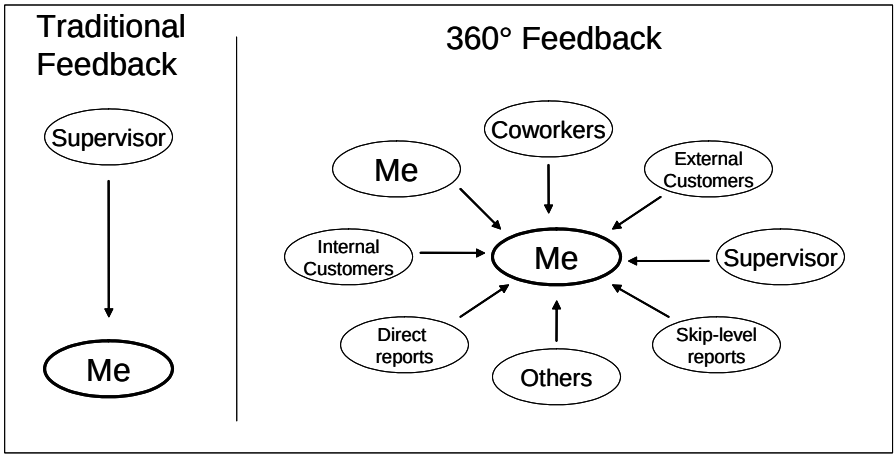

Fig. 18. Single-source versus multisource feedback systems. (Edwards & Ewen 1996)

360° feedback systems evolved from organization surveys, total quality management, developmental feedback, and performance appraisals. Organization surveys assess employee perceptions about work and the work setting. In the 1970's and 1980's, these surveys became more targeted and focused also on employees' satisfaction with their immediate leadership. The need to make data-driven decisions and improve information quality from customers and suppliers prompted an increase in the use of customer service surveys. These quality and customer service surveys are often designed as a part of a TQM (Total Quality Management) initiative. (Edwards *et al.* 1996)

Feedback for the purpose of employee development became popular in the late 1980's. Developmental-only feedback helps employees avoid career derailment. As work envi-

ronments and structures change, organizations are realizing the need for a base of developmental support and accountability that extends beyond the supervisor. Co-worker support in the form of peer coaching is an obvious choice. (Edwards *et al.* 1996)

Performance appraisals began in the late 1800's as the industrial age mechanized production processes. In the 1960's and 1970's the management by objectives approach, which compared individual results to organizational goals and strategies, became popular. Changes in the workplace, such as flattened organization structures, teams and changing employee expectations regarding their participation, helped organizations to recognize multisource assessment as an appraisal alternative. Note! Peer reviews are distinctly different from the multisource assessment process of peer evaluation or appraisals and are not part of the evolutionary development of 360° feedback. They present a step backward in the use of multisource assessment systems because the action associated with peer reviews is typically disciplinary. (Edwards *et al*. 1996)

All early multisource assessment applications were designed for performance management and appraisal. The concept of developmental-only feedback arose in the late 1980's, when standardized multisource assessments of leadership became popular. However multisource systems were adopted slowly mainly due to culture, inertia, budget, research and technology. During the 1970's and 1980's organizations experimented with many variations of multisource assessment models. The usual progression is as follows:

1. Appraisals by walking around (superior talks to supervisor)
2. Supervisor asks individuals for specific feedback.
3. Supervisor calls group meeting to discuss feedback.
4. Supervisor asks for written input from the work associates.
5. Ratings are collated by secretary or specialist
6. Ratings are scored using spreadsheet or surveys.
7. Work associates rate colleagues on disk.
8. Online assessment with safeguards.

Only ten years ago few people had even heard of 360° feedback. Today, most large organizations have some experienced users. The speed at which 360° feedback is being embraced by business is accelerating. Fig. 19 summarise the roots of 360° feedback. (Edwards *et al.* 1996)

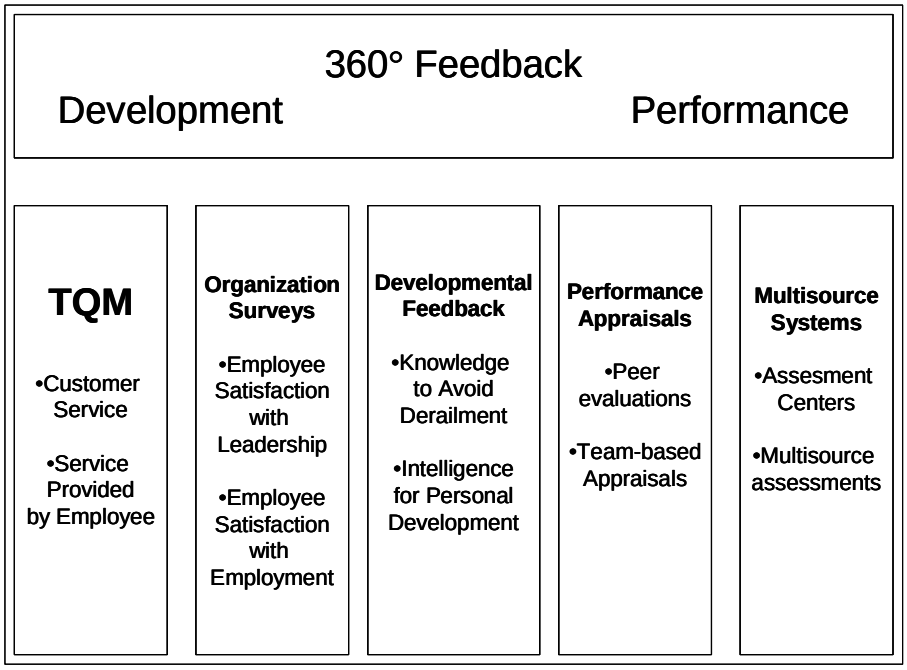

Fig. 19. The roots of 360° feedback. (Edwards *et al.* 1996)

2.2.5.2 360° feedback and impact of the external raters

In the past fifteen to twenty years, organizations have come to see 'the customer' as a focal point for defining a winning business strategy. Along with this focus has come a fundamental redefinition and realignment of organizational systems and processes around those activities that add value for the customer. If adding value for customers is the key to competitive success, then customer involvement is shaping performance expectations and providing performance feedback is crucial to keeping the organization and its workers focused on strategy critical activities. (Tornow & London 1998)

By adding an outside perspective from which data are provided, organizationally ingrained ways of thinking can be challenged. It is also a way of connecting the outside world of the customer to the inside world of the organisation. Perhaps the most important, involving customers (including internal customers) in the 360° feedback process can be a key link between individual performance management and the strategic management of the organization – a link that can maximize the value of the process for both the individual and the organization. Fig. 20 shows a simple model showing how customer input begins and ends the process of linking the organization to its market environment. (Tornow & London 1998)

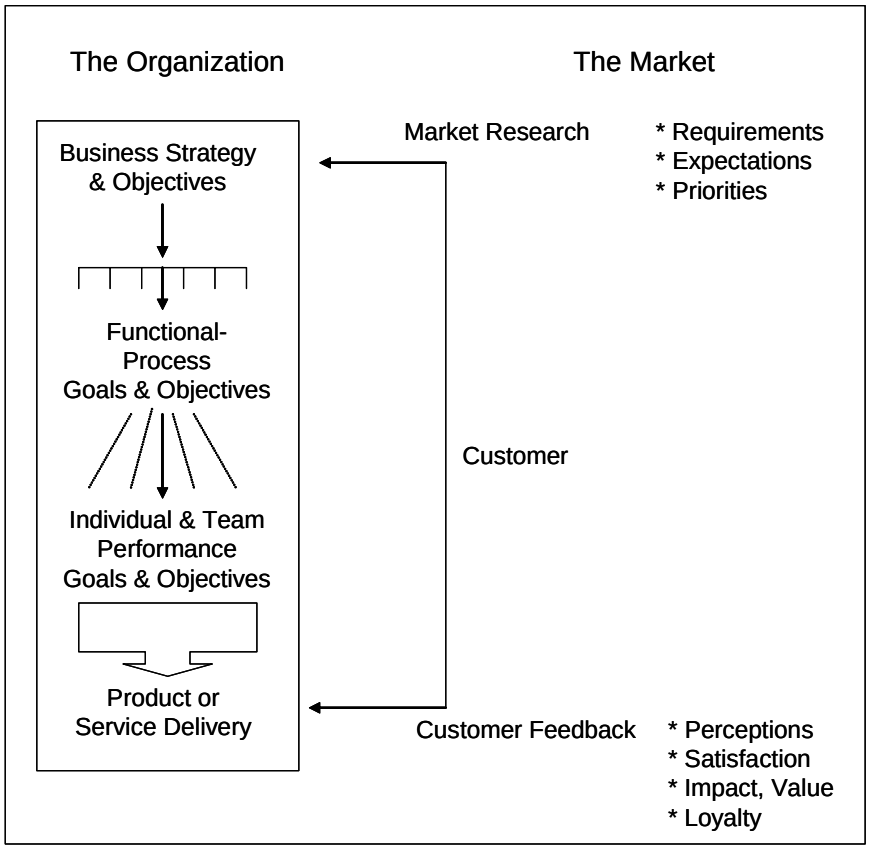

Fig. 20. Closing the loop with customers. (Tornow & London 1998)

2.2.5.3 360° analogy to satisfaction surveys

In addition to business perspective and motivation as described in chapters 3.5.1 and 3.5.2 similarities can be found between 360° feedback and satisfaction surveys covering both customer and supplier satisfaction surveys in the methodology and the administrative aspects.

360° feedback instruments by Tornow and London (1998) can be summarized as

1. The questionnaire,
2. The scored feedback (or results) and
3. The administrative process used to get the organization started and to reach beyond the feedback process to the ongoing support for individual development.

In general, the administrative process should be one that serves to increase trust by providing all participants with sufficient information about the purpose of the interven-

tion, as well as about what people can expect along the way. Next the 360° feedback process will be presented in terms of several guidelines. (Tornow & London 1998)

Administrative process by Tornow W and London M (1998)

1. The purpose of the process should be clear to every member of the organization.
2. Communicate clearly about the limits to confidentiality and anonymity. Confidentiality and anonymity are often confused. Confidentiality refers to the limitations placed on how a target manager's data are shared, whereas anonymity refers to the extent to which a rater's identity is revealed.
3. The target manager should choose raters.
4. Customer input can be very useful, but the questionnaire should capture their unique views.
5. Support for development should be supplied.

The questionnaire by Tornow and London (1998):

The choice of a questionnaire is a critical step in the 360° feedback process. The quality of the feedback that participants will receive is very much determined by the quality of the questionnaire (or instrument) used. The following guidelines will support reviewing and developing a 360° feedback instrument.

1. Instructions on all questionnaire and accompanying materials should be clear and complete.
2. Questionnaire items should be well designed. Several aspects to item construction should be noted in developing or selecting a questionnaire. These include the nature of item content; the clarity of item language; the uni-dimensionality, face validity, and observability of items; the extent to which items are free of unnecessary qualifiers; and the test-retest reliability of items.
3. Consider design alternatives for response scales.

The output by Tornow and LondonM (1998)

What the 'manager' actually receives as a result of the process is scored output or a feedback report. The following guidelines will support in building up the feedback report.

1. Feedback scales should be well constructed. Any evidence that scales are poorly constructed can be a reason for individuals and organizations receiving feedback to reject the information or lose commitment to development goals.
2. Qualities assessed should be developable.
3. Consider design alternatives for report formats. It has a significant impact on how readily data can be interpreted, as well as how motivated individuals and organizations are to take action based on the feedback.

The impact of the 360° feedback will be limited if the process ends as soon as the individual or organization receives the feedback report. In order to be successful in using the information to improve performance, support is needed from the organization. (Tornow & London 1998)

As a conclusion the similarities between 360° feedback and satisfaction surveys are clearly visible from the process and methodology as well as the business point of view.

3 Supplier Satisfaction as a management tool

3.1 Survey as a management tool

A Supplier Satisfaction Survey is a management tool for a company to improve and further develop its internal processes and external processes with suppliers and partners in supply chain network. The survey aims to address both business and communication related aspects and will aim to measure the quality of the relationship between supplier and ‘the company’ in terms of how a supplier views ‘the company’. Results will highlight the areas where the supplier and ‘the company’ have together invested resources to improve key processes but also identify areas where is still room for improvement.

Survey results are inputs to the strategic planning of the company as well as everyday operations and behaviour. Focus of the survey can vary in each survey even if the questionnaire is same. It is important that ‘the company’ is able to measure those activities in which it has been investing recently, or areas which performance were scored poorly in a previous survey.

Briefly, the purpose of the survey is to measure how ‘the company’ is performing through external eyes.

Fig. 21 describes how supplier satisfaction survey can be placed in a company’s long term and short-term management system.

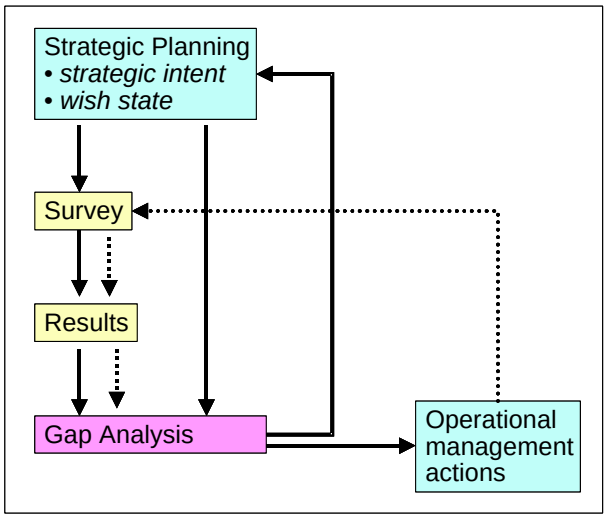

Fig. 21. Survey as a management tool.

Strategic Planning. Cox states (2001) that competence in procurement and supply management starts from understanding the bases of supplier power and business strategy. He highlights the critical role of buying as one of the two main competences that all organizations require if they seek business success.

Hussey (1990) describes the differences between strategic planning and management in the book "International review of strategic management". Strategic planning considers external links like products, markets, environment, when strategic management adds internal elements like organization, style. In strategic planning the strategy formulation is to solve a problem and focus on the 'hard' aspects of the external environment. Strategic management adds implementation and control as wells as being concerned with social and political aspects.

According to Hussey's definitions (1990) strategic planning in a supplier satisfaction context also includes strategic management. It means setting up the company or function's strategic intent. Intent gives direction to every activity. The target state is where the company want to be one day. Wish state in a supplier satisfaction context means a specific wish state for every activity. Wish state could be specified from the background questions, like what kind of supplier base we would like to have, for example, we would like that the major part of our suppliers are public companies in order to avoid family companies' sometimes 'feeling' based behaviour. As another example, agreements are kept is a question for which could be specified that it must have a 100% agree –level.

In this case strategic intent advises 'the company' to measure its activities through external eyes. The tool for that is a supplier satisfaction survey. Specified wish states are used in the gap analysis phase.

Survey. The questionnaire and interview are very efficient methods with opinions and attitudes (Sommer & Sommer 2002). Otherwise the survey in this context is as described in earlier chapters. It could be a general survey or theme survey. Theme survey frequency could be faster than the general survey. Results can be used to review operation manage-

ment actions. It is not always necessary to have a wide general survey in order to get a quick response for a certain specific action, whose development direction or successfulness is wanted to be measured.

Result. Result analysing has five steps. Starting with understanding of the results, what is really said behind the figures. After the results are understood it is possible to create and agree actions. Communication of results is the key issue both internally and externally. In a large company communication is always a challenge and essential. Unsuccessful communication of survey results do not lead to an improvement in supplier relations. Lastly no actions should be agreed without a proper follow up.

Result analyses and reports are described in more detail in the following chapters.

Gap Analyses. Gap analysis reviews wish state and survey results. Depending on the focus and objects of the survey these are outputs for actions by operational management and/or feedback to strategic planning.

Operational Management Actions. Operational actions can be one-time actions, like changing the method or template to send demand visibility numbers to suppliers from an unreadable fax to a web-based system. It could also be a wider process development issue, where a process need to be created, communicated and implemented.

Stank *et al.* (1999) write in their article the effects of the operational performance and relational performance on customer satisfaction and loyalty. Their research revealed that the benefit of establishing customer relationships emerges from the enhanced insight the supplier is able to gain regarding customer needs and wants. Upon learning of those needs and wants, the service provider can focus on operational means of meeting the needs and wants.

In conclusion, the survey as a management tool is practical and flexible. It is modifiable in order to get answers for needed issues. Depending on the questionnaire (general or theme) every survey can be tuned to the needed measures. However it is recommendable to keep the general kind of questionnaires unchanged in order to get trend information from surveys

3.2 Process for making a Supplier Satisfaction Survey

The following chapters will present the supplier satisfaction survey in practice. The supplier satisfaction surveys were made in 2000, 2001 and 2002. All surveys are analysed from a process point of view as described in this study. The main interest is to model the supplier satisfaction survey as a management tool. Exact survey results are used only when they support supplier satisfaction modelling.

The input for whole survey process comes from ‘the company’s’ strategic intent, which is stated: to be recognized both internally and externally as the world leader in sourcing and procurement (‘The company’ intranet/ Supplier Day Presentation 2002 by JF Baril). The following Fig. 22 shows the steps of the process. The first point is Project Set Up. ‘The company’ decision that a survey is needed and will be made. In the project set up phase also the survey objectives and focus will be defined. Each of the following steps is presented in more detail in the coming chapters.

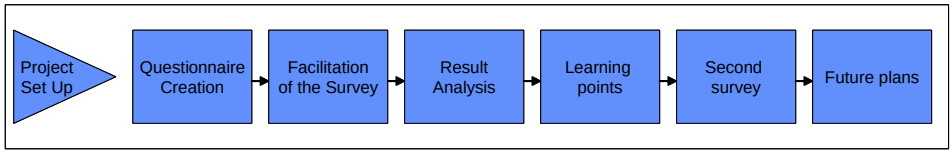

Fig. 22. Process steps of making a supplier satisfaction survey.

Fensel (2000) writes about problem-solving methods. They are used to describe the reasoning steps and types of knowledge which are needed to perform a task by a knowledge-based system. The above process description can be considered as a problem solving method.

3.2.1 Questionnaire creation

The most critical issue in questionnaire creation is to define satisfaction items. What you measure is what you get! Sommer & Sommer (2002) state two dimensions as general aspects to every questionnaire: (1) content of a questionnaire, and (2) format pertaining to its structure and appearance.

Questionnaire creation has six steps as shown in Fig. 23. Inputs for questionnaire items are created by studying literature, brainstorming satisfaction dimensions, and finally asking in face to face interviews from suppliers what they think are the right items to ask, when trying to specify supplier satisfaction elements.

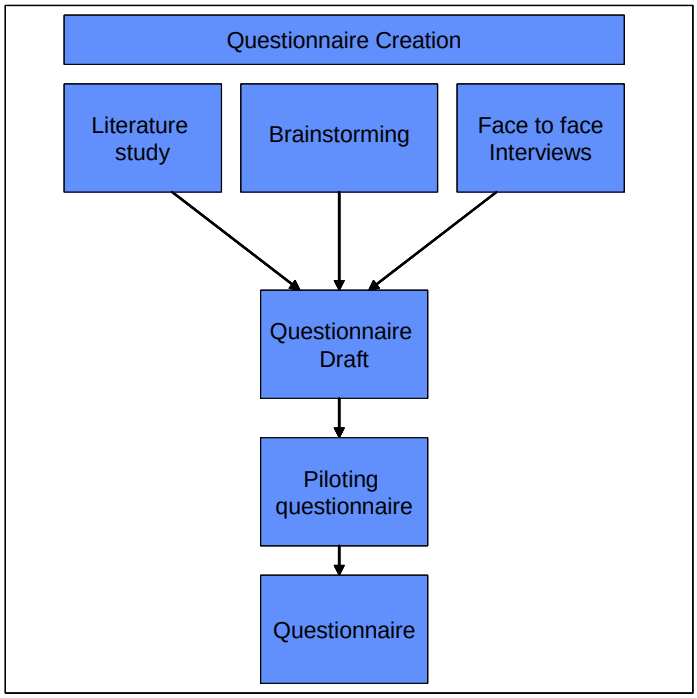

Fig. 23. Questionnaire Creation Steps.

3.2.1.1 Literature study

The purpose of the literature study was to find out what has been discovered already in the area of supplier satisfaction. The literature search covered mainly publications from the late 1980's and early 1990's. They covered mainly project reporting from studies concerning supplier relationship and satisfaction. It was common to all publications that they were independent cases. Common theoretical rules for supplier satisfaction could not be found from the literature. As discussed in the previous chapters the definition of the supplier satisfaction business world is just on the border line to take supplier satisfaction in as a part of the company development.

Literature findings are reviewed in more detail in the second chapter of this book: Framework for Supplier Satisfaction.

3.2.1.2 Brainstorming

Three brainstorming sessions were arranged and driven by the researcher in order to outline the supplier satisfaction dimensions. Between brainstorming sessions output from each session was reviewed and comments asked from several people outside the supplier satisfaction project team. Chapter 3.2.1.2. refers to the meeting minutes of the brainstorming sessions and the conclusions of the researcher, which can be found from Appendix VI. Fig. 24 summarises the different viewpoint for supplier satisfaction in 'the company'.

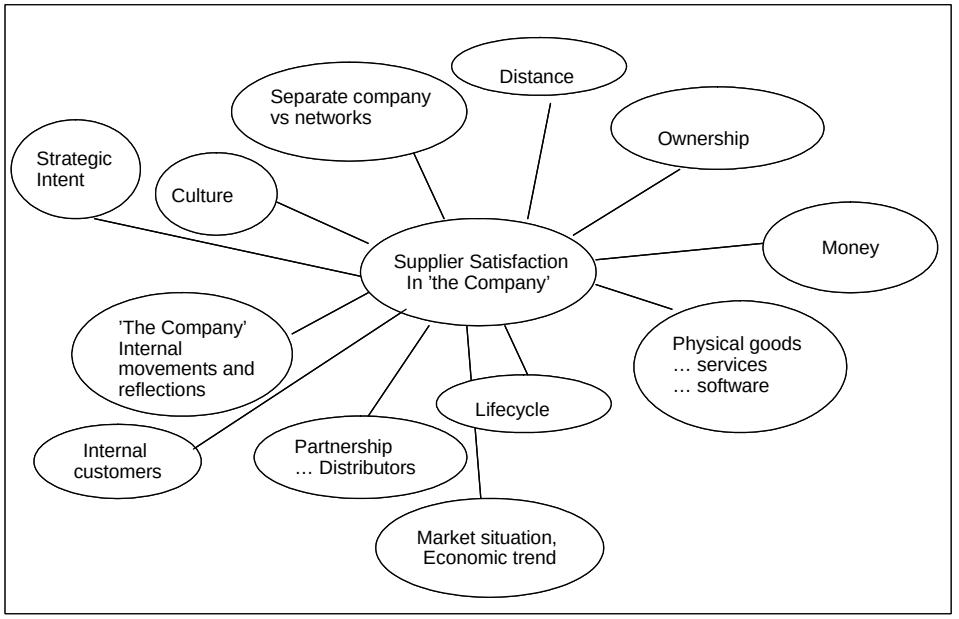

Fig. 24. Different Viewpoints for supplier satisfaction.

Culture. The brainstorming team: Kess P, Lohiniva P, Niskanen J and Maunu S came to the following conclusions about culture and its relation to supplier satisfaction. 'The company' is playing in a global market. It sells and buys items globally. Cultural differences could be divided geographically, by cultural locations and by internal company cultures. 'The company' has suppliers all over the world like in Japan, China, other Asian countries, Europe and the Americas. All of the countries have their own cultures that differ and business behaviour expectations are different.

Many of the suppliers are also multinational companies, which means that they already have several cultures present internally. Even if a multinational company might have a common company culture, local geographical culture issues affect business behaviour. It works with a multinational buyer company too. Suppliers can easily rank 'the company' sites with which they prefer to co-operate.

As a brainstorm conclusion at all levels cultural differences affect business and business relations. The following literature references also support this conclusion.

Hofstede (1982) writes that culture could be defined as the interactive aggregate of common characteristics that influence a human group's response to its environment. Hofstede has identified four dimensions of culture: power distance, uncertainty avoidance, competitive and individualism. It is not right the say that behaviour can be predicted on the basis of four dimensions, but it is right to question assumptions and thoughts about how the different dimensions affect our own behaviour and that of others (Nokia Mobile Phones, Training Material Culture and Appropriate Workplace Behaviour).

Trickett *et al.* (1994) combine the latest research and thinking to reflect on how different social groups must deal with realities brought about by our long-standing attitudes, policies and laws, and institutions. The main viewpoint in this book is psychological diversity.

Schein (1989) presents the company/organizational culture. He defines the culture of the group as: A pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems. In addition Schein talks about the leadership role and how crucial role the leaders play in successfully applying the principles of culture to increase their organization's effectiveness. The concept of culture is most useful if it helps to explain some of the more seemingly incomprehensible and irrational aspects of groups and organisations. The bottom line for leaders is that if they so not become conscious of the cultures in which they are embedded, those cultures will manage them. The analogy can be also found here to supplier satisfaction and how effectively it is possible to use the survey results.

Lee (2001) has researched the Chinese distributor's perceptions of the classification of international joint venture supplier's use of power courses and the relation between power, conflict and satisfaction. The results indicate that they perceive a dichotomy of coercive and no coercive forms of power. The primary construct linkages studied here are supported and found to be similar to those in Western channels, although the strengths of the relationships are quite different.

Distance. According to the brainstorming team the distance between 'the company' and supplier can be geographical and/or culture based. When two parties are located in different regions i.e. if one is in Europe and another in the USA, time zone difference is the first issue to make business relation management harder than if both parties were in the same time zone. Long distances also requires more from logistics in order to have optimal time and cost consumption in goods delivery.

Distance can be also 'mental', culture based. Other culture issues were discussed earlier in this chapter.

Laeven (2001) in his policy research working paper discusses the value of the product and geographical diversity. As a research finding both geographic and product diversification destroy value at high levels of diversification, suggesting that agency and influence costs arising from increased complexity outweigh the benefits of diversification at high degrees of diversification. Geographic diversification is found to be valuable, however, at low levels of diversification.

Supplier Relationship (from partnerships to distributors). The brainstorming team continues 'The company' has all kinds of supplier relationships from the highest involvement

level partnership, which requires official commitment from all organizational levels on both sides, down to the traditional buyer-seller relation with distributors.

The supplier relationship can be also categorized by the status of the business relation, which could be potential, approved, preferred, face-out, VIP group. If the supplier is in the face-out phase, it is realistic to say that the relation is not on the same satisfaction level than with suppliers e.g. in the approved or preferred phase.

Supplier relationship is widely discussed in literature from several viewpoints. Kirkby (1981) considers the issue under the topic "How to keep the customer". He states that a continuous business relationship is a means to customer and supplier satisfaction. For the supplier, this means establishing and maintaining account control so that profitable sales from the account can be expanded in a less competitive environment.

Fram (1995) has studied purchasing partnerships. He highlights two major benefits of establishing purchasing partnerships, which are better communications and more interpersonal trust (Fram 1995). Frost (2001) writes about shared services, where he finds enormous untapped potential. Scharitzer and Kollarits (2000) state the practical meaning of satisfaction indicators as predictors of future customer actions or as standards for the quality of a supplier-customer relationship. They also highlight the concept of relationship management (Scharitzer & Kollarits 2000).

Commodity areas (Physical goods… Services… Software…). The brainstorming team continues 'The Company' is buying items from several commodity areas including physical goods, services e.g.. Physical goods, services, software and subcontracting can be standardized or customized products. Service could be e.g. a customized transportation service or storage service. Software and subcontracting can vary from resource hiring to black box design work.

In this research and surveys 1-3 the main focus has been physical components as can be observed from the background questions of the questionnaire (Appendix II). Suppliers delivering software have participated in the survey also, but their portion has been less than 5% (NMP Intranet / Supplier satisfaction Survey Result report 2002). Service providers were not part of these research surveys.

Lifecycle. As above specified the brainstorming team came to the conclusion that lifecycle thinking is multisided, embedded with a time line, cross processes, manufacturing technologies etc. The time line has historical and future aspects. 'The company' and supplier can have several projects on going at the same time, which are on the different maturity level, as presented in Fig. 25. Satisfaction level is the same as the lowest scored project has.

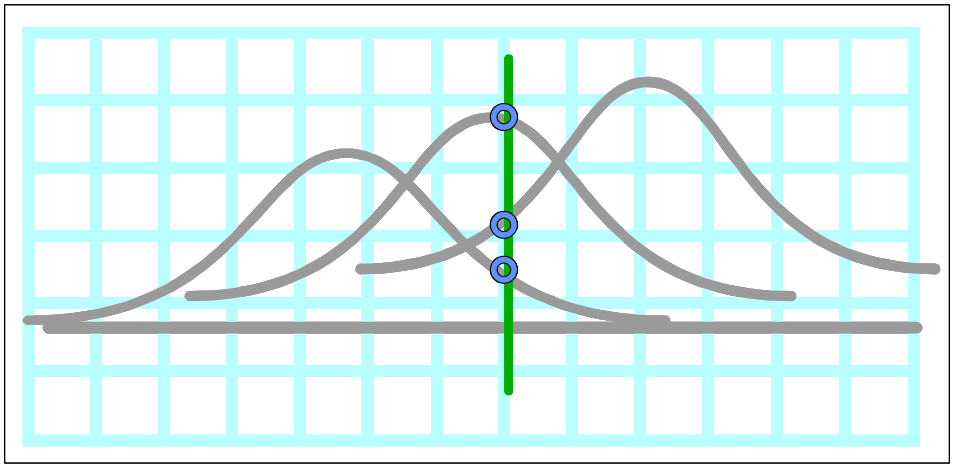

Fig. 25. Cross profile through time.

Projects can be part of research and technology and/or product creation, which means for suppliers that there is potential for business sometime in the future. Only some forecasts of volumes and technologies used are available and uncertainty is the keyword. Comparing the situation to the manufacturing phase, when business is more agreed and mature, satisfaction level can be expected to be higher due to the lower risk level in business.

de la Mare (1982) presents the need for a life-cycle economic approach to product innovation. He states investments requires savings and constraints in current consumption to realize future benefits greater than would otherwise be forthcoming. Throughout society this requires respect for savings and profit, which must be interpreted as the lifeline to corporate survival rather than a political symbol of the exploitation of the masses.

Ownership. The brainstorming team continues: Supplier companies are owned by families or they are listed/public companies. During the lifetime of the supplier company, it might change its ownership structure from family business to public company. There might also happen internal or external takeover situations. Changes in ownership include also change resistance inside the company, which has an effect on business behaviour.

Laeven (2001) in the same research, which was already mentioned in the Distance section, continues with insider ownership and its impact on diversification. The research found that insider ownership is related to less diversification, suggesting that insiders view corporate diversification as value-destroying.

Separate company vs. networks. he brainstorming team states that companies are structured by different systems. They are either independent companies or part of a supplier network or cluster. Depending on the network, companies could be structured horizontally or vertically or be a traditional subcontracting network. Networks can offer suppliers advantages in risk management balancing, which has an impact on satisfaction elements as well as rules as to what the network has establish itself.

Company networks have gained lot of attention in the literature. Tapscott (1999) has edited a collection under the topic “creating value in the network economy”. Slikker and van den Nouweland (2001) write about social and economic networks in cooperative

game theory. OECD proceedings (2001) continue with articles under the topic Innovative Clusters – drivers of national innovation systems. Innovative Clusters point out that questions about the relevance of value-chain institutions that are neither suppliers nor customers apply with varying force to different clusters, depending on the length of value chains and the relative maturity of the clusters. Very short value chains offer fewer cumulative opportunities for the introduction of product or process innovations of the kind that occur spontaneously along the lengthier value chains of suppliers (OECD proceedings, 2001).
Lundan (2002) discusses network knowledge in international business. She states that increasing turbulence and uncertainty is driving firms to consider other interaction forms in addition to rivalry. New representations of inter-organizational relationships leading to new forms of reticular organizations are the result of these disruptions.

Zheng and Possel-Doelken (2002) writes about strategic production networks and they present different network structures. According to Zheng and Possel-Doelken the basic structure of the network and its variability determine the requirements for coordination and communication that are the main drivers for cooperation. They present network types as tree -, bus -, star – and ring types. Zheng and Possel-Doelken also discussed the problems of strategic networks. These can be divided into three groups: human resources – related problems, organization–related problems and technology–related problems. Typical human resources–related problems are lacking relationship management: no trust among the cooperation partners, loyalty to the network and different business cultures: problems in the collaboration of employees (especially in global networks). Typical organization–related problems are insufficient market orientation: No adoption of the co-operation objectives and the network's business processes to changes in the market and insufficient flexibility of processes and structures. Typical technology–related problems are insufficient technological standardization and poor support of the business processes by the information technology.

Bovet and Roucolle (2000) present the value net in their article. A value net is a dynamic network of customer/supplier partnerships and information flows. It is so named because it creates value for all of its participants – the company, its suppliers and customers – and because the players operate in a collegial. A Value Net makes it possible for companies to (1) solve customer problems, rather than simply sell products, (2) respond to customer demands rapidly, (3) build a strong brand based on valuable services and (4) build in barriers to competition.

Kraut, Steinfield, Chan, Butler and Hoag (1999) present a virtual viewpoint on networks. They studied how electronic networks worked compared to interpersonal relationships. As a result the use of electronic networks was negatively associated with such outcomes as order quality and effiency, and satisfaction with suppliers, while more reliance on personal linkages was associated with better outcomes and mitigated the negative consequences of using electronic networks.

Market situation, Economic trends. When this study started economical trend world wide were very positive. All business was flourishing. Today the market situation is not looking so good. Recession is real life. Uncertainty of the market situation reflects supplier relationships. Co-operation projects need a more official level commitment and risk level is aimed to be as low as possible.

Lee-Mortimer (1993) in his article discusses collaboration between companies. He states that organizations should, especially in a recession, try to support on another by

developing supplier partnerships to help reduce both costs and risks. The collaborative agreements between two companies should focus on three main areas: Supply chain management, continuous improvement and R&D support for new products and technology.

'The company' Internal Movements. The Brainstorming team finds that there are lot of different items inside 'the company', which affect supplier relation and satisfaction. 'The company' has its own specific requirements, which may not be in line with industry standards and the supplier is requested to make extra efforts in order to fulfil requirements. Business decisions, company strategies and supplier strategies drive 'the company' direction towards an agreed goal together with the company culture. These internal movements reflect not only internal business behaviour, but also external relations.

Blanchard and O'Connor (1997) write about managing by values, aligning both strategic decisions and day-to-day actions with the guiding values of the company. They present a MBV (Managing By Values) process. Phase1 is clarifying the mission/purpose and values. Phase 2 is communicating the mission and values. And phase 3 is as defined already earlier in this chapter aligning daily practices with the mission and values.

Internal customers. Internal movements were discussed in the previous paragraph. The brainstorming team stated that internal customers could be added as a dimension of internal movements. Internal customers are other functions, organizations and other sites (locations). Processes and culture are the elements, which drive the business behaviour, also inside 'the company'.

Dean and Terziovski (2001) brought into discussion quality practices and customer/ supplier management. The TQM (Total Quality Management) perspective includes external and internal customer and suppliers. Their research shows the application of quality practices in customer/supplier management has a positive and significant effect on performance outcomes. As a research result: Supplier involvement in system change and development has considerable importance.

Strategic intent. As earlier discussed in this report, strategic intent drives 'the company's' business. Also suppliers have their own strategic intents. In order to create supplier satisfaction, the strategic intents of 'the company' and supplier need to be met. When thinking of the long-term relationship, the common targets of 'the company' and supplier could be expected to be valuable.

This is in line with how' the Company' has defined its supply partnership creation process. According to it the main targets are first to find and formulate the common strategic intent and if that is achievee, to create a strategy to reach the common target, strategic intent. (NMP Intranet, Supply Partnership

Money. Finally the brainstorming team considered if supplier satisfaction is all about money after all? Are those suppliers most satisfied who make the best profit out of business with 'the company'? One thing is sure; all companies are founded to be successful and profitable. So money as a satisfaction dimension can not be forgotten.

Verhoef *et al.* (2001) in their article investigate how satisfaction and payment equity, defined as the perceived fairness of the price, affect cross-buying in a multiservice provider. The main question in the research was: does satisfaction also create more value by leading consumers to cross-buy more products or services? For example while customers for one product line may be initially attracted by low prices, can such buyers be profitably attracted to other goods and services offered by the company. According to Verhoef, Frances, Hoekstra (2001) the value of a customer of a multiservice provider depends on

the length of relationship, depth of the relationship and breadth of the relationship. As a result there is no main effect of satisfaction shown on cross-buying. Similarly, the difference in satisfaction levels between the focal supplier and competitor had no significant effect on cross-buying. Although the research team did not find any main effect of satisfaction, the results shows that, as relationship length increases, the effect of satisfaction grow on cross buying. So Verhoef, Frances, Hoekstra state the effect of satisfaction to be more complicated.

3.2.1.3 Face to face Interviews

There were five face-to-face interviews in order to understand how suppliers themselves define supplier satisfaction. These five suppliers were randomly selected from 'the Company' supplier base. The main point in the interview was not to lead discussions in any direction. All interviews were tape-recorded and afterwards written out and analysed. As a pre-work for the interviews the researcher made an interview structure and gave the instructions to interviewers how to conduct the interview and what were the targets. Interviewers were purchasing managers who work daily with the supplier. It was expected that the interview would give the most fruitful and honest answers when having a familiar interviewer.

The interview started with an open question: what does the supplier think is important from their point of view when specifying supplier satisfaction. Some additional questions and comments were defined beforehand in order to help the interviewer to create a fruitful interview session. The 2nd part of the interview was to collect feedback from suppliers as to how they see and feel about what other suppliers has said and/or comments from the literature. In the following table 2 both parts of the interview questions and comments are presented in more detail.

Table 2. Face to face interview structure.

1st part open question to supplier: What they think is important from the supplier point of view when specifying supplier satisfaction?	• How supplier defines supplier satisfaction generally? • What elements does supplier satisfaction include? • Examples from good and bad experiences about supplier satisfaction • Biggest barriers and problems against supplier satisfaction • Have you had any activities towards supplier satisfaction for your own supplier's or/and you as a supplier to a customer? • 'Benefits of satisfied supplier for customer'
2nd part open question to supplier: Ask comment from the supplier how they feel about what other suppliers have said and/or comments from literature	• How the following elements affect the supplier satisfaction from the supplier's point of view: o Distance (physical) o Ownership (supplier) o Profits, payments o Merchandise (physical goods, software, transportation, product or service) o Lifecycle of product o Market situation, economic trend o Supplier-customer relation (partnership … distribution) o ´The company' internal movements and reflections o Culture (company and geographical) o Separate company vs network

Sommer & Sommer (2002) also states that face-to-face interviews provide an excellent way of exploring complex feelings and attitudes. This point was also taken into consideration during the face-to- face interviews. Sommer & Sommer also recommend to use a structured or standardized interview, when the question is an attitude survey or opinion poll. The important aspect is that the same questions must be asked in the same manner for all respondents in the sample. When reporting the most clear and significant results should be described first. Trivial or irrelevant findings should be ignored.

Interview answers are collected in table form and full reports of interviews can be found in appendix VII. During the interview answer analysis, the researcher grouped the answers under the topics: business, roles and responsibilities, openness and other. An interesting and, somehow, encouraging finding from the interview answers was that topics were self-explanatorily created from answers. A comment could be placed under several topics in order to keep all views open. In addition to the above interview structure there is also the topic: miscellaneous issues, which came out in the interview session. To summarise the interview, suppliers were asked to list a maximum of the five most import issues which affect supplier satisfaction. In table 3 the most important issues are listed the interviewees answered them.

A conclusion from the face-to-face interview results, which highlighted the self-explanatory topics, gave encouragement to the whole study that supplier satisfaction elements could be defined and measured. Also pilot suppliers were all interested about the

topic and clear first signs were got that this kind of survey would get a good reception among suppliers.

Table 3. The Most Important issues in supplier satisfaction from supplier point of view (interview result).

Supplier	Most important issues
A	Profitability Long Term continuity (business stability) ESI (Early Supplier Involvement) Relationship (trust on partner) Culture
B	Communication ESI Openness Trust
C	Trust Common project management Partnership incl. ESI Profitability
D	Supplier/Customer relations ESI Communication Better timing
E	ESI Supplier/Customer Relationship Market situation Profits and payments

3.2.2 Creating the questionnaire

Questionnaire creation was started by summarizing and grouping interview answers. Input from the literature was used to generalize the issues. The questionnaire was structured into four parts: background questions, business related questions, communication related questions and summarizing questions. Background questions were created in order to classify the results. Suppliers were asked to answer a couple questions concerning their company. Those dimensions were:

- Technology area of supplier (electronics, mechanics, accessories, software, etc.)
- If supplier supplies globally or regionally (APAC, Americas, Europe & Africa)
- Size of the company (small, middle size, large)
- Ownership of the company (public or private)
- Length of the business relationship with ‘the company’
- Any critical events that have affected the business relationship (open question)

Classification was done based on manageable areas, such as if some problems occur more in the area of electronics than in mechanics the actions are easier to set up, implement and follow up. The same thinking was behind supplier supply areas. The size of the

company and ownership measure if there is any difference between the behaviour of small and big companies or if they are privately held or public companies. This aspect was discussed in brainstorming sessions as a potential item to create deviation in results and in case it happened it would be possible to take actions accordingly e.g. set up the target as to what kind of supplier profile is recommend in 'the Company'. The length of the business relationship is the closest direct question to have correlation with supplier satisfaction. The assumption is that satisfied suppliers supply longer than unsatisfied, but not being limiting, since technology development also changes the supply needs and new suppliers are needed. The last background question asked the supplier to describe any critical event that might have happened and had an affect on the relationship. This is important to recognise from the answers, since it could lead to misrepresentation of the results.

Measurable questions were divided into two groups business-related questions and communication-related questions. This division is based on the assumption that supplier satisfaction is result of both hard/fact and feeling based items. Business-related questions are considered to be fact-based questions – how well the process is supporting and working towards supplier satisfaction and smoothly implemented the supply chain. Business-related questions covered questions under topics: profitability, agreements, ESI (Early Supplier Involvement), business continuity and forecasting/planning. Profitability is fundamental to all successful business. Also suppliers mentioned that themselves in the face-to-face interviews. Assuming that also suppliers are targeting a long-term business lifecycle in their business, profitability has an impact on supplier satisfaction. Agreements are clearly asking how well the agreement process meets each other's expectations and is implemented. Early Supplier Involvement (ESI) is a process whose ultimate target is to improve the "product" quality, manufacturability and decrease/optimise the cost. In the survey 'the Company' is interested to hear if this process is valued among suppliers and how much it has an affect on supply chain implementation and supplier satisfaction. Suppliers pointed out the importance of the ESI in the face-to-face interviews. Business continuity is concentrating on long-term business relationships and directions. It also includes the items like long-term business relationships and stability as highlighted in the face-to face interviews, as well as in the current literature as a satisfaction element. Forecasting/planning has also a shorter aspect and it measures the volume forecasting process and its capability to meet supplier expectations and further fulfil the needs of a smoothly performing supply chain as supplier satisfaction was defined in chapter 2.

Communication-related questions are considered as soft/personal-based items. Since supplier satisfaction is also based on opinions of the counterparts playing in a supply chain, soft-based items also need to be taken into account. Communication-related questions covered questions under the topics: roles and responsibilities, openness and trust, feedback and 'the company' values. Roles and responsibilities measure how the agreed and supported communication methods work in the supply chain. Are the current contacts and tools suitable and enough? Suppliers highlighted openness and trust in the face-to-face interviews. Also the current literature brought the trust aspect strongly out as a satisfaction element. Feedback is a question to understand the feedback process and how it could be further developed. Feedback is considered as a two-way communication tool. 'The company' values measure how well the company culture, attitude and behavior are met. But also how well they are in line with a supplier company values.

Most of the questions have been formed in statement format. Supplier opinions were asked in three different ways. First to tell how strongly the supplier agrees or disagrees with the statement. In the second step the supplier is asked to state how they view ‘the company’ in comparison to their best customer. The third kind of questions are open questions. If a supplier has disagreed or partly disagreed with some of the statements, he/she is requested to explain why he/she stated that. When there is the question of issues that might be understood in several ways the supplier is asked first to explain how they understand the subject. The last type of open question is that the supplier is asked to specify improvement possibilities. In the following Fig. 26 different kinds of questions are presented, how the supplier’s opinion is asked. Fig. 26 is part of the original survey questionnaire.

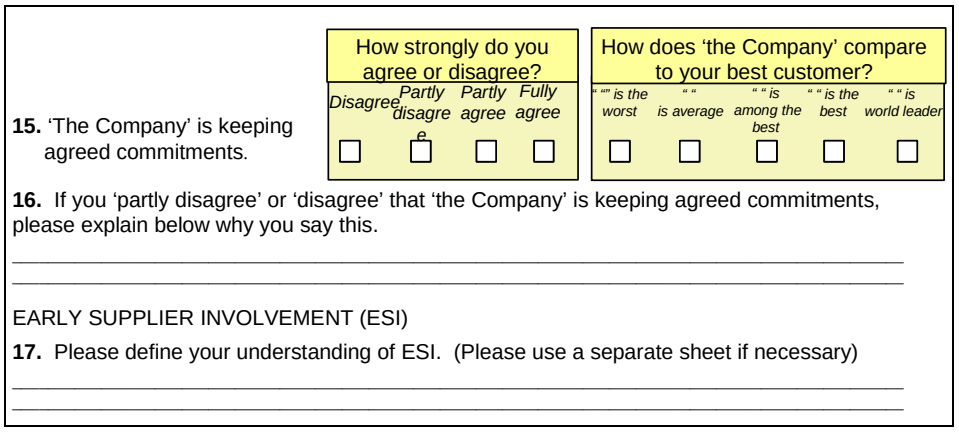

Fig. 26. Different kind of questions, how the supplier’s opinion is asked.

In summary, part of the suppliers were asked to list the three most important areas, where they would like to see improvement in ‘the company’ as well as to list three areas, where ‘ the company’ is already as good as or better than average. And finally the supplier is asked to describe how the supplier would state ‘the company’s Sourcing and Procurement functions’ in comparison to their best customer. Summarizing questions give valuable information also for this study, because it tells the elements the suppliers consider to be the most important factors in supplier satisfaction and also if some of the elements are left out of the questionnaire.

3.2.2.1 Questionnaire testing

Sommer & Sommer (2002) discuss a pilot study which can be considered also as questionnaire testing in this research. According to Sommer & Sommer a pilot study is a preliminary use of a procedure designed to identify problems and omissions before the actual study is conducted.

The purpose of this research questionnaire testing is to verify that questions are understandable. Testing was done both internally and externally. Test participants were asked to comment on the questions if it is clear and easy to understand what is asked, not answer the questions.

The external test group consisted of ten randomly selected suppliers from 'the Company' supplier base. The main feedback was a request to clarify 'the company' values in the questionnaire. Values are something, which is very familiar inside the company, but to outside 'the company' a supplier could see them as a guideline of 'the company' behaviour.

'The company' internal test gave more comments. Feedback varied from content comments to wording. What subject should be covered in the questionnaire, everyone who gave feedback would have liked to see their own business area, as such, as a part of questionnaire like inventory management. Wording is a very sensitive area due to the fact that the questionnaire is sent globally to different countries and answerers are different due to their mother language.

As a result from the questionnaire testing, values were explained first to suppliers and then questions where asked. Subject suggestions were considered, but not added to the questionnaire in order to keep the questionnaire more suitable in each area of technology and purchasing. Finally questionnaire spelling was reviewed and verified by a native English-speaking person.

The questionnaire can be found in appendix II.

3.2.3 Facilitation of the Survey

3.2.3.1 Criteria for survey facilitation

The target in the survey was primarily to understand the business relationship from the supplier's perspective. 'The company' wanted to get as honest and reliable answers and comments as possible from suppliers. Anonymity was decided to be a key criterion of the survey in order to get suppliers to answer ingenuously. Sommer & Sommer (2002) define anonymity as the following: Anonymity means that the researcher does not know the identity of the participants in the study.

Suppliers, who were invited to participate the survey, were in 22 countries all over the world. Suppliers were not limited to any category of supplier relations between partners and distributors. Survey participants represented a major part of the supplier base of the company. There were 392 survey invitations sent out in survey1. Survey2 was 358 invitations sent out and 211 in survey3. Lower number of survey participants in survey3 was the result of 'the company's' actions to reduce its supplier base to a more manageable level. Survey 1 was the first supplier satisfaction survey covering the whole sourcing and procurement function of 'the company'. To convince suppliers and motivate them to answer 'the company ' wanted to use an internationally recognized research company to facilitate the survey. Also other possibilities like using university trainers were studied,

but disqualified in order to have an independent survey image. The research company was used to facilitate the survey according to instructions by the researcher. The main tasks were (e-)mailing the survey questionnaire and collecting the answers. The researcher communicated with the facilitation company daily in order to monitor the facilitation and ensure that instructions where clear and understood.

Curium & Holstein (2001) state in their book: “A handbook of interview research” that interviewer selection may influence the quality of surveys insofar as interviewer attributes affect an interviewer’s ability to perform the job or the manner in which respondents interpret and answer questions. However the researchers according to Curium & Holstein have found no consistent correlation between interviewer characteristics and the quality of interviewing.

3.2.3.2 Survey facilitator selection and agreement content

‘The company’ has a process description for requesting an ad hoc research study under customer research processes (NMP Intranet, NMP Customer Research Processes, Process: Request for Ad Hoc Research Study, 1999). This process was used as a guideline also in this survey facilitation. In the following Fig. 27 has been presented step-by-step survey facilitator selection including agreement content.

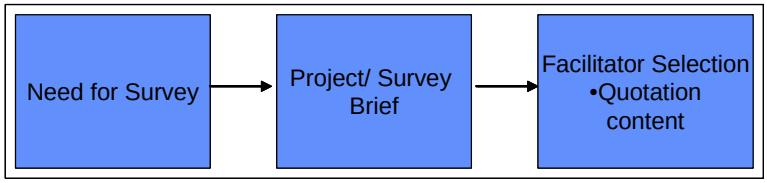

Fig. 27. Steps of survey facilitator selection.

Need for Survey. It is recommendable that before starting to communicate with external survey facilitator candidates, the need for the survey should be reviewed and agreed. Beforehand should be found out, if the needed data could be gathered from existing information or internally. However supplier satisfaction measurement is always collecting information from external sources. And also the nature of the collected data is more based on opinions that pure factual numbers. So an external survey was justified.

Project/ Survey Brief. It is recommendable to make a survey brief before starting to communicate with external survey facilitator candidates. The brief should contain background information, methodology, research objectives, time schedule, reporting requirements, costing and other specifications of the survey. Information, which makes it easier to communicate the survey purpose both internally and externally. It is important to understand what kind of survey is planned, so that survey facilitator candidates can be selected from the right category. The brief is also used when communicating the survey with the survey facilitator candidate.

Facilitator selection including agreement content. It is advised to contact several agencies to find the most capable facilitator. A quotation should include the same topics as the

survey brief described earlier from the facilitator point of view. In the evaluation step all topics will be analysed e.g. the following.

Criteria 1: *Understanding of brief:* Do they demonstrate that they fully understand the objectives?

Criteria 2: *Creative Input*: Have they come up with their own ideas in addition to those suggested in the brief?

Criteria 3: *Methodology*: Are the suggested techniques appropriate? (Sampling, Fieldwork, Analysis)

Criteria 4: *Assumptions*: Have they made any assumptions that impact on the project's success or costs? Are these correct?

Criteria 5: *Agency Expertise*: How much and how relevant?

Criteria 6: *People*: Do I want to work with these people?

Criteria 7: *Resource Allocation:* Do they have sufficient resource allocated, especially executive input/ management?

Criteria 8: *Timescales:* Do they meet the required timescales? What are the dependences?

Criteria 9: *Costs:* Which represents the best value? (Only considering the costs for those agencies which meet all the above criteria)

Survey 1 facilitator was selected to make the data collection via a postal self-completion survey. The agency justified the methodology by giving the fact that a high proportion of suppliers were based in the Asian region. Telephone interviewing in the Asian region is not viewed as being culturally acceptable and face-to-face interviewing is likely to be cost-prohibitive.

The agency wanted also to remind us that postal surveys typically yield low response rates – commonly around 20%. Given the relatively small universe of suppliers, when the number of suppliers to participate the questionnaire is less than 400 this is likely to generate approximately 70 returned questionnaires. This number of interviews will not give sufficient data for detailed analysis at region, country or supplier level. Only at a total sample level will analysis be statistically reliable.

3.2.3.3 Survey pre-work

A personalized covering letter was also proposed by the agency, which outlined the purpose of the study, and instructions on how to complete the survey. The covering letter was posted to the named contact within each supplier, with a postage paid return envelope for convenience of sending back the questionnaire. 'The company' was asked to supply corporate letter headed paper on which these letters were to be printed including an electronic signature for a member of 'the Company' project team. The agency pointed out that it is important that the cover letters are seen to be coming from 'the Company' to emphasise the seriousness with which it views this survey. The cover letter model is attached as appendix 3.

The agency also strongly recommended that personnel within 'the company' who deal with individual suppliers contact each supplier prior to questionnaire mail-out. This will

act as pre-notification of the survey and encourage respondent participation. This is important to maximise response rates from a limited supplier base.

Following the initial mailing, a secondary mailing was conducted to all contacts to remind them to complete the questionnaire, if they haven't already done so. The reminder letter was provided from 'the company'. The reminder letter model is attached as appendix IV.

3.2.3.4 Reports

When defining the report request to survey the facilitator report structure had two dimensions: type and sub reports. Reporting types were fact-based numbers, graphics, written comments as they were written in open question answers and a conclusion summary of each topic. This reporting model can be interpreted as content analysis technique as defined by Sommer & Sommer (2002). The basis of content analysis is quantification, instead of impressions and about trends and biases; the investigator comes up with precise figures (Sommer & Sommer, 2002).

Sub reports should have been made by each background question by technology area, region, company size, company ownership, length of business relation between 'the company' and supplier. Comparatible reports such as comparing a technology area by regions like mechanics APAC (Asia-Pacific) compared to mechanics Americas and Europe. Comparing regions / technology areas to each other including a global, general view. Of course a global general view was also requested.

As the agency mentioned already in their quotation that, due to the small universe of suppliers, it is not possible to get statistically reliable analysis at a region, country or supplier level. So 'the company' accepted getting only a global, general level report using the styles described above.

3.2.4 Result Analysis

The survey facilitator agency provided a written electronic report, using graphics and numbers to highlight the research findings as requested by the researcher. The survey result was planned to be used in several ways, both internally and externally by 'the company'. Fig. 28 demonstrates the analysis steps.

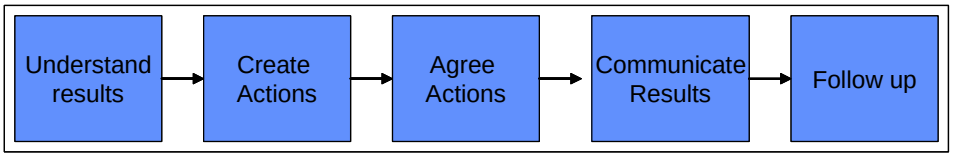

Fig. 28. Result analysis steps.

Understand the results. The most challenging part of the result analysis is to find out from the huge amount of data, what really is the key message from the suppliers to 'the company'. The purpose is not only to find out improvement-need areas, but also it is important to share positive feedback. As a summary of result understanding each question topics were analysed by disagree/agree –level and competitor comparison, and the main findings highlighted.

Averages of the disagree/agree- and comparison question answers were calculated and reported as results. Open-ended answers were used to better understand the disagree answers, but also to find out if a single supplier specific happening was giving a considerably lower/different score than the general feedback. Some single specific cases were picked up from answers, but these did not have a statistical effect on answers.

Create actions. The purpose was to find out three to five key areas, where the supplier saw improvements possibilities. Action criteria were: 1) poor status of disagree/ agree – level and competitor comparison level, 2) All proposed actions where created in such a way that they were able to be implemented. Implementation was also concerned when thinking about the number of created actions. Actions were created and proposed to 'the company's' sourcing and procurement function in the area of working mechanism and way of doing and attitude.

Agree actions. An interesting and very positive finding from the results was that proposed actions were also in one way or another part of 'the company's' sourcing and procurement development programs. Results and action proposals were presented to those development programs' owners. Program owners got more motivation for their development jobs by getting a wider view of how their programs will have an impact in the bigger picture. So all action proposals were agreed.

Communicate results. Survey results, including agreed actions, were communicated inside 'the company' and also to suppliers, who participated in the survey. Internal communication was arranged in a way that employees had the possibility to choose the most convenient way of getting the result data. Results were stored on sourcing and procurement web pages, including the original full report of the survey provided by the Facilitator Company and summary report, which highlights positive and negative findings together with agreed actions. The survey project owner also provided result presentations as face-to-face happenings or teleconference + net meeting, when the audience was located in a different country or region.

The suppliers got the first feedback of the result on Global Supplier Day, just after the survey's closing day containing very general status information. A more detailed feedback letter was posted to suppliers later. The supplier feedback letter also contained information on agreed actions.

Follow Up. Survey follow-up, as such, is the next survey after approximately a year. Actions will be reviewed as a part of the development programs of the sourcing and procurement function.

3.2.5 Learning points from the first Survey

After the first survey, also referred to as survey 2000, learning points were collected and analysed before starting to plan a new survey. Key learning points came from the areas of time scheduling, reporting and communication.

Another issue was that agency proposed a different reporting structure than we had requested. Agency explanations were that with such a small universe of answers it is not statistically valid to give any other kind of report than all answers together. However, question by question if there were any significant differences between technology and geographical areas, those differences were mentioned in the written report. Afterwards, when communicating the results, different 'sub-reports' were asked from 'the survey customer' and the general, overall report wasn't accepted as such.

The original survey project schedule and what actually happened is presented in Fig. 29.

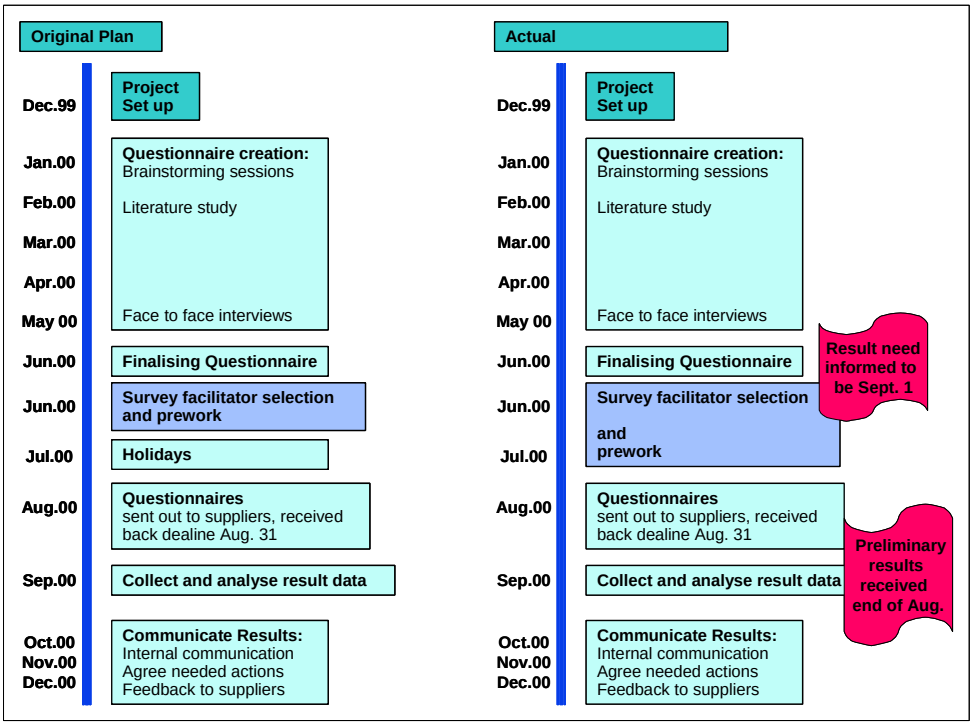

Fig. 29. Survey Project Plan and Actual.

Learning points from the first survey to be improved in the next survey were time schedule, reporting requests and communication. The time schedule needs to be clear when starting to plan the survey. It should also be communicated and agreed with all survey participants inside 'the company'. Reporting requests should be collected and communicated with the survey facilitator as early as possible and build up survey according to these. Fig. 30 summarises the learning points.

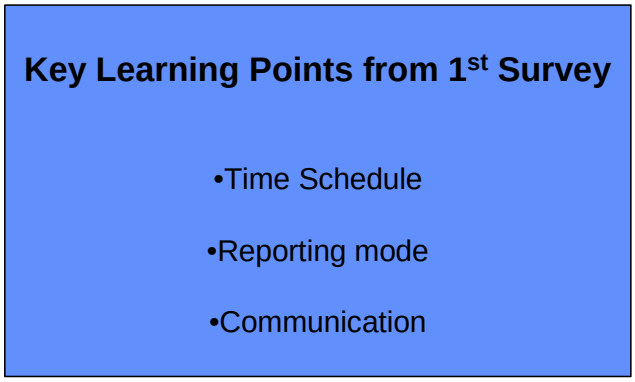

Fig. 30. Key Learning points from the 1st survey.

3.2.6 Second survey

The second survey, also referred to as survey 2001, was made 9 months after the first survey. The main starting point was to have supplier satisfaction measurement in place as well as to measure the development from the previous year. Survey 1 and survey 2 differences are described in this chapter.

3.2.6.1 Survey 2 Purpose, Objective and scope

Survey 2 had also the specific scope to support the Sourcing and Procurement function's strategic implementation in addition to the purpose of the survey, which is to measure how we are performing through external eyes. As stated in 'the company's' strategic intent: to be Recognized Internally and Externally as the World Leader in Sourcing and Procurement. The scope of survey 2 is flexible and reliable supply. A flexible and reliable supply scope heavily supports 'the company's' activities in collaborating and supplier integration projects.

In order to be able to implement the survey to meet its target, it is necessary that results must be comparable against survey 1 results. In other words, no changes to questions are allowed. In order to understand the status of collaborating and supplier integration projects and their implementation, a couple of new questions concentrating just on those issues needed to be made. This new questionnaire was sent out only to those suppliers who have participated in collaboration and supplier integration projects. The answers were also analysed separately.

3.2.6.2 Survey 2 time schedule

The biggest difference and improvement in survey 1 and survey 2 implementation was that the time schedule for survey 2 was agreed at the same time when the survey purpose, objectives and scope were agreed. The time schedule for survey 2 is presented in Fig. 31

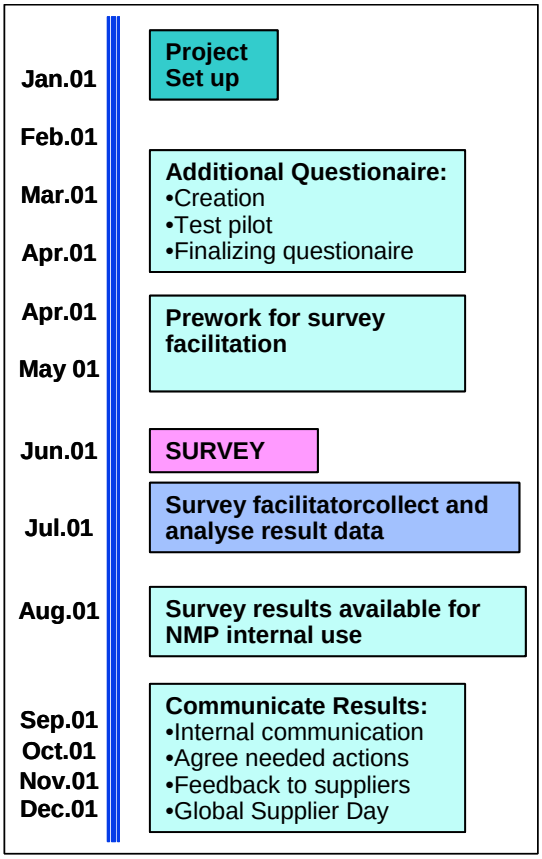

Fig. 31. Survey 2 time schedule.

Project set-up included decision-making concerning the timing of the survey, agreement on target setting and survey facilitation. Additional questionnaire creation had three steps: creation, testing and finalizing. Additional questionnaire creation will be covered in more detail in the following chapter. The pre-work of survey contained many kind of tasks: modifying questionnaire, collecting information on supplier contacts, preparing cover letters to suppliers and facilitator selection. The original questionnaire was modified by adding two new questions. Question 1B, which is optional, asks the supplier to specify in more detail its technology area. This was a request from a survey customer. Question 33B is an open question to ask suppliers: What kind of system-to-system integration is needed in the future?

– For Planning (mid term planning / monthly Forecast)
– For execution Focus (short term planning / Demand Visibility)
– Other's / in which other areas are you looking for S2S (system to system) integration?

This question was added to support survey 2 scope flexibility and reliable supply.

Survey results were first analysed internally by the survey project team in order to have agreement that all needed reports were available from the survey facilitator. Results were communicated both internally and externally during the autumn.

3.2.6.3 Additional questionnaire creation

The additional questionnaire was made in three steps: creation, testing and finalizing. The first issue in the creation phase was to clarify, what was wanted to be measured with additional questions. The creation team included persons from collaboration and supplier integration projects. As a result of brainstorm session 14 new questions were created under the topics: general, functionality, support and future.

New questions were tested with four suppliers and finalizing was easy to do by following the feedback and rewording the questions in a more unambiguously understandable format. The new questionnaire was sent out to eleven suppliers together with back ground questions from the original survey. The supplier sample is small, but there are no other suppliers yet participating in collaboration and supplier integration projects. The additional questionnaire is attached as appendix V.

3.2.6.4 Web-based data collection

Survey 1 was facilitated as a postal type of survey. In survey 2 the approach was a web-based questionnaire. There were three challenges concerning the web-based survey: Selection of survey facilitator, collecting e-mail addresses and reliability of the web – based questionnaire.

Selection of survey facilitator. The first idea in selecting the survey facilitator was to use the same facilitator as in the previous survey. Survey 1 facilitator quoted for an e-mail–based survey. E-mail with an attached Word document has a risk potential that might lower the response rate (Quote for Supplier Satisfaction Survey2, 2001)

1. Respondents may be worry about opening attachments due to a fear of viruses. This may be addressed by 'the company' contacts pre-notifying respondents of the forthcoming survey.
2. Respondents require Microsoft Word to read the questionnaire and Internet access to email the completed questionnaire back.
3. Respondents are able to alter the format of the questionnaire, and add or delete questions. The document should be protected to prevent respondents from doing this accidentally.

4. This methodology relies on respondents returning the completed questionnaires correctly. Respondents need to either FORWARD the email back to the survey facilitator or SAVE it and re-attach it before returning the email. If this does not happen, there is a possibility of respondents either sending back the email without the questionnaire attached or sending back an empty questionnaire.

However a high risk potential for a low response rate was not the reason for choosing another company to facilitate the survey. Word-based questionnaire answers require a lot of data coding and processing work, which is one of the most expensive parts of the total cost of survey facilitation. The selected survey facilitator offered a web-based questionnaire which limited manual response processing work and at the same time the cost of the survey facilitation decreased.

Web-based questionnaire implementation required e-mail from 'the company' to pre-warn and motivate suppliers of the forthcoming survey. The survey facilitator sent the e-mail to survey participants containing link and passwords to the web – located questionnaire. The questionnaire was built in to a web-location, which also allowed building in automatic reminder systems and response data processing. Comparing quotations from a cost point of view this kind of survey implementation was around a 65% cheaper solution than more traditional data processing method like described above. Even the survey method changed from postal to web-based survey, the role of the survey facilitator remain the same as in first survey -mailing survey out and collecting answers.

Collecting e-mail addresses. Collecting contact information and e-mail addresses sounds like an easy operation. A month (April) was reserved in the survey project plan to collect e-mail addresses. The target was to collect approximately 350 names. Persons, who were responsible of supplier relationship management, were asked by e-mail to provide contact information.

Some of the contact persons did not have a personal e-mail address available and so-called via –addresses were also in the contact list. The number of via-addresses was seven, so it didn't cause any trouble for survey facilitation and the survey facilitator also had a solution for these cases.

Reliability of web –based questionnaire. After the questionnaire was launched to suppliers, the survey facilitator received four e-mails from suppliers, in which they were concerned about the reliability of the survey, e.g. if 'the company' was really behind the survey. The survey facilitator forwarded those e-mails to the survey project team and each of the 'hesitating' suppliers got personal e-mail from the company to explain the questionnaire in more detail.

The reason for the hesitation letters was that pre-warning e-mail hasn't reached all of the participants due to the tight schedule when all of 'the company' persons should have sent the e-mail and the exact questionnaire was sent out. However it was pleasure to receive the hesitation e-mail. It indicates that suppliers concern and value the confidentiality between business relationships.

Some comments form literature. Gubrium & Holstein (2001) write about the costs and benefits of Internet interviewing. Those can be assessed along a number of dimensions, some of which parallel traditional interviewing concerns and some of which are unique to the Internet media. For example the unpresentativeness of current Internet access remains the greatest problem for data collection on-line. Given that only approximately 0.01 percent of the world's population was on-line at the start of year 2000. As another example

of benefits: the lower cost of Internet research is one of its biggest advantages in relation to other modes. Also working with digital data offers substantial benefits.

3.2.6.5 Results and result communication

Results were analysed and communicated as described in chapter 2.3. The biggest difference between survey 1 and survey 2 reports was the larger database. The new results were comparable to the first survey results. The current state could have analysed by looking at the changes between the surveys and new status level.

Subcategory reports were now available for the first time. Subcategories were divided into two groups: by technology areas and by regions. In the report, technology groups were compared against each other. A similar report was also available from regions. From the result understanding point of view these reports were valuable in order to pick up those areas where some of the technology groups or regions have a strong impact on the overall results by upgrading or downgrading it. Sub reports were also used inside the subgroups to better understand the own groups behaviour and how the outsider sees it.

3.2.7 Third survey

A third survey also referred to as survey 2002 was made 12 months after second survey. The main focus was to get an understanding of the current state of how suppliers rate 'the company' overall and against their other customers. The survey implementation followed the previously described process.

The difference to the second survey is that again 6 new questions were created. These questions were related to business continuity and forecasting. The target was to measure how well new tools and processes are implemented and how well those support the new business model to work in the areas of material forecasting, logistics and storage management.

3.2.7.1 Future plans for survey implementation

Survey implementation is a consistently changing area. Both customer requirements and facilitation techniques changed between surveys. As already happened between the first and second survey the focus of the survey was different. The first time key point was to understand generally what is the current status. The second survey was already more specific from the target point of view. The focus was to cope with supplier integration, however it was requested to get comparable info, which meant that the questionnaire remained the same and a new additional questionnaire was created.

The presented surveys were very wide from question base and covered all areas of satisfaction elements. The elements contain issues which are continuously developing, and issues which are a one-time exercise. Implementation of a new tool is an example of a one-time exercise and how successful it is, it is then measured by a survey. So, in the future, the questionnaire could be a theme survey focusing only those elements, which are requested to be measured. In order to get the wanted result the questions are also more specifically from the subject. Some elements are quick changers and other could be much more slower, so the frequency between different theme surveys depends on the subject. Fig. 32 presents the idea of how to combine general, wide focus surveys with several, smaller theme surveys. Smaller in the number of questions and the possible number of survey participants.

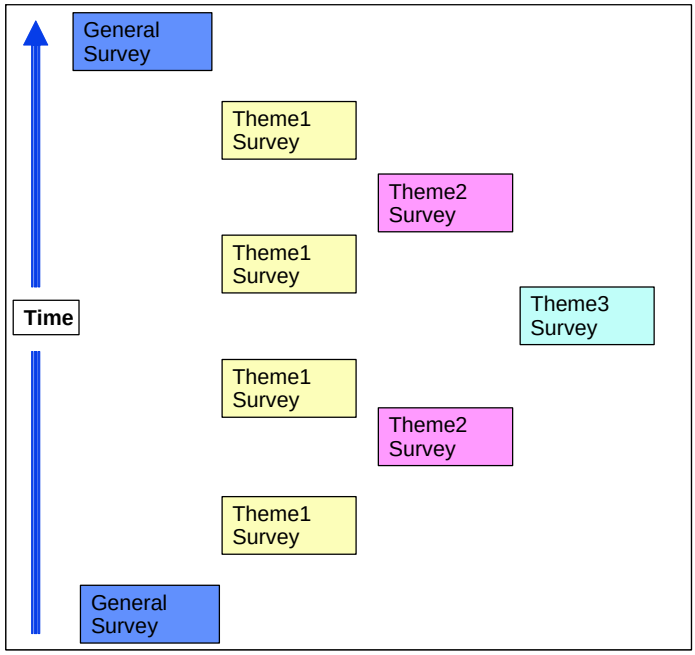

Fig. 32. General Survey supported by theme surveys.

Survey facilitation techniques are also improving all the time in a way that it is easy to access for survey participants, answering is easy as well as data collection, including data processing. This provides more alternatives for future surveys and to make the survey an even more effective tool for management.

Web-based surveys are also possible to build in the company's own global supplier web–tools. It will, however require licenses to use 'certain' survey software and maintenance personnel to update the database with the wanted changes. An in-house built in system would also reduce the reliability to preserve anonymity. By adding a couple of more convincing items, such as to keep costs under control and having always the latest survey facilitation techniques in use, it is recommendable to use an external survey facilitator.

3.2.8 Survey as a measure

In this chapter we will consider how reliable a measure is the survey.

Questions – are we asking the right things –. In these surveys the viewpoint was very wide, covering all the dimensions of the sourcing function. If we analyse how the questionnaire was created, the whole questionnaire creation process (described in chapter 3.2) was made to ensure that all aspects are covered and the right answers asked. When piloting the questionnaire first inside 'the company' many improvement proposals/requests were presented. However many of the proposals were very detailed issues from a narrow area of expertise. The survey as a management tool gives the possibility to notice narrow expertise areas as presented in survey2, when an additional COPLA questionnaire was created and the survey done.

Responses. How honest are the suppliers, when they answer the questionnaires? Are they maybe afraid of losing business if they answer too critically? In order to avoid supplier hesitation the keyword for the survey was anonymity. External facilitators were used to secure anonymity and show 'the company's' commitment to the survey. High response rates were expected and to ensure getting answers 'the company' actively reminded suppliers of the importance of the survey.

'The company' wanted to promote confidence around the survey by having it frequently and also giving feedback to suppliers of the survey results and what 'the company' is going to do with them. Two-way communication encourages suppliers to answer more honestly every time. Being critical doesn't necessary mean that business is over.

When comparing results by regions, no big differences can be found. From the cultural point of view we could expect to get more positive agreeing statements from the APAC region, but the results tell differently. One answer as to why cultural differences are not impacting strongly on the results is that a major part of 'the company's' suppliers are multinational companies with an understanding of cultural differences in business behaviour. Another aspect is that 83% (survey2) of the suppliers who had answered the survey had been in a business relation with 'the company' over 3 years (68% of those over 5 years).

Response rate. Response rates were very high in all three surveys being 45% in Survey1, 56% in Survey2 and 51% in Survey3. Already in Survey1 it was over double the typical mail survey response rate. A high response rate was clearly reached because the survey introduction to suppliers was successful. The purpose of the introduction letter was to guarantee to the suppliers that 'the Company' is really behind this survey. But it also worked out at the same time as an excellent motivator tool for the supplier.

Reliability. Reliability as described by Sommer & Sommer (2002) – scoring categories must be reliable. Two people doing a content analysis of the same article using a single list of categories should come up with similar results.

There are two pieces of evidence that support the reliability of this research. During the three different surveys we could find that results followed the previous trend and also actions done between surveys. Another note is that outside of this research scope there was conducted another survey (MTME Supplier Satisfaction Survey, 2002) as a sub-survey of one technology area and even then we find the results following each other.

Survey – do we need it –. There has been criticism inside 'the company', that these kind of satisfaction surveys do not give any benefits to 'the company' nor suppliers. So

far experience from ‘the company’ is that top management is very dedicated to the survey and its results. The same message can be interpreted from the results. Suppliers, who had supplied to ‘the company’ the longest, also give value to these kind of surveys and find them valuable when developing the business relationship.

Also the same kind of criticism can be interpreted from the supplier side. Even if the response rate is high there is a big part of suppliers who did not answer the questionnaire at all.

After the three surveys attitude and positiveness towards the supplier satisfaction survey and the importance of the results has increased. ‘The Company’ has learnt to use the new type of information and suppliers have learnt to use the survey as one communication tool with ‘the Company’.

3.3 Defining supplier satisfaction dimensions

3.3.1 Conclusions of the survey results

From an overall point of view, criticism and openness from suppliers increased from survey 1 to survey 3 results. This is a result from the safe environment and encouragement created by ‘the company’, who is showing frequently to suppliers that it is interested in listening to what suppliers say and also the answers to them. The more often you ask the more honest answers you get.

The questionnaire had questions touching on both soft and hard issues referring to communication as soft issues and business-related questions as hard issues. Let us have a deeper look at dimensions like forecasting, business continuity and early supplier involvement (ESI), and how they can be considered as supplier satisfaction dimensions.

Forecasting. Forecasting/planning as a supplier satisfaction element covers questions concerning systematical volume forecasting, reliability of forecasts and new questions in the 2002 survey covering additional topics like understanding of the new business model for logistics in ‘the company’ and how the tools and logistic service providers support the new business model.

The forecasting/planning as a whole is an area, which has had a dramatic positive change between the last two surveys. As shown in Fig. 33, which presents the disagree/agree – average level trend between surveys (NMP Intranet, Supplier Satisfaction Survey result report 2002).

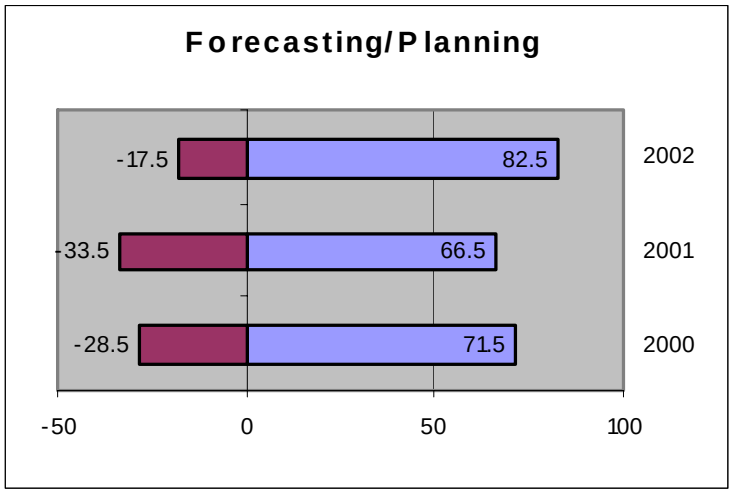

Fig. 33. Forecasting/Planning disagree/agree – average level trend.

'The Company' has put lot of effort into developing its processes and tools in the area of forecasting and collaborative planning with suppliers. Survey 3 really shows that the work that has been done is something which suppliers also value and find important. When analysing more questions in detail, there are topics like forecast reliability and long range volumes which still had over a 30% disagreement level, which really is something to consider and work for in 'the Company'.

In the new questions (survey 3) suppliers are rating 'the Company' performance in the disagree level between 10-19%. Suppliers giving disagree statements, were also asked to give open answers in order to get more specific information on the topic. Suppliers were asked for example how well new tools have been taken into use and what improvement possibilities they see in the tools. Suppliers told their experiences of tool introductions, training and how user-friendly tools are.

The positive trend in forecasting/planning is also evident when suppliers compare 'the company's' performance against their best customer. This information is important. 'The Company' gets feedback that its investments in new processes, way of working and tools are valued by suppliers and are also the one of the best practices in use in the industry.

As a satisfaction element forecasting/planning is concrete. Suppliers can easily say if they are happy or not, if they want to see something changed or if something is missing. From the corrective action point of view to create a system that satisfies everyone in the supply chain network is a more challenging task starting from the forecast word itself. If the information is fact, 'the company' shouldn't need to talk about forecasting at all.

Business Continuity. Business continuity as a supplier satisfaction element covers the questions concerning future projects' needs in terms of volumes, technology, schedules and long term directions. This element most reflects the industry market changes. Between the years 2000 and 2002 the telecom industry has been in turbulence, which has had an effect on business relations also. This is also visible in Business Continuity disagree/agree average level trend presented in Fig. 34 (NMP Intranet, Supplier Satisfaction Survey result report 2002).

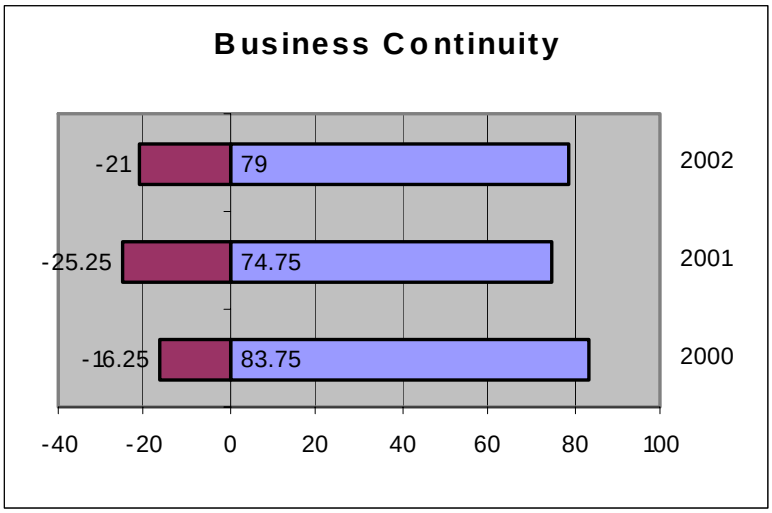

Fig. 34. Business Continuity disagree/agree –average level trend.

Business continuity from the result point of view had a big change towards disagreement between the 2000 and 2001 surveys. This was a result that the enormous growth in the telecom industry stopped and growth expectations were not met. In survey 2 suppliers commented in open answers that they did not have visibility of 'the Company's' future needs in terms of technology, volumes and projects. Because of this new situation regression, suppliers became also more cautious and worried about future business with 'the Company'. Suppliers started to demand more information about product and technology roadmaps as well how 'the Company' sees the industry situation.

'The Company' stated to focus more on what to communicate and how to suppliers, as a response to suppliers. The Purchasing Managers of 'the Company had a common message to suppliers and quarterly meetings were arranged to share the needed information. These efforts were notified to suppliers and survey 3 results were more positive towards agreeing. Also when 'the Company' was compared to the supplier's best customer a positive trend can be seen. However 'the Company' isn't happy with the result yet. Still a fifth part of the suppliers are not happy with the situation. Regression in the whole telecom industry has a big role. When there is a fear of losing business, it takes more from 'the Company' and its suppliers to find communication channels and create trust in order to be able to share all the needed information including feeling-based visions between two companies.

As a satisfaction element business continuity is a corner stone. It is also concrete; you either have business in the future or not. The element becomes more abstract, when we take a time line view. Again long-term plans are always forecasts, best estimations strongly driven by strategic intent of 'the company'.

Early Supplier Involvement (ESI). According to survey suppliers are considering ESI to be the involvement of suppliers in projects from the early development phase, including the sharing of roadmaps and business information.

In addition to ESI definition Early Supplier Involvement as supplier satisfaction element covers questions concerning understanding of ESI, how well it works in practice, is it commonly use and how beneficial it is.

Early Supplier Involvement disagree/agree average level trend is presented in Fig. 35 (NMP Intranet, Supplier Satisfaction Survey result report, 2002). The attitudes towards ESI are slightly improving. Clear positive change can be found from statement 'ESI is working in practise'. Disagreement level decreased from 25% to 17% between survey 2 and 2002. When comparing 'the Company' to its suppliers best customer 'the Company' is considered to be with 70% agreement level either 'the Company' being the world leader, being best or being among the best. There have been any significant changes between surveys 2000, 2001 and 2002.

ESI is the area where the results also show clear differences between technology areas. This is explainable when considering differences between design and development processes. Mechanics area has been traditionally advanced group, when discussing ESI. Designs need to be made together with manufacturing equipments and processes in order to get products in volumes. Also other technology areas has noticed the value of ESI, but need hasn't been so urgent and natural activity when availability is ensured other way. When 'the Company' wanted to focus the supply chain also the parameters like costs and quality has been considered as ESI benefits.

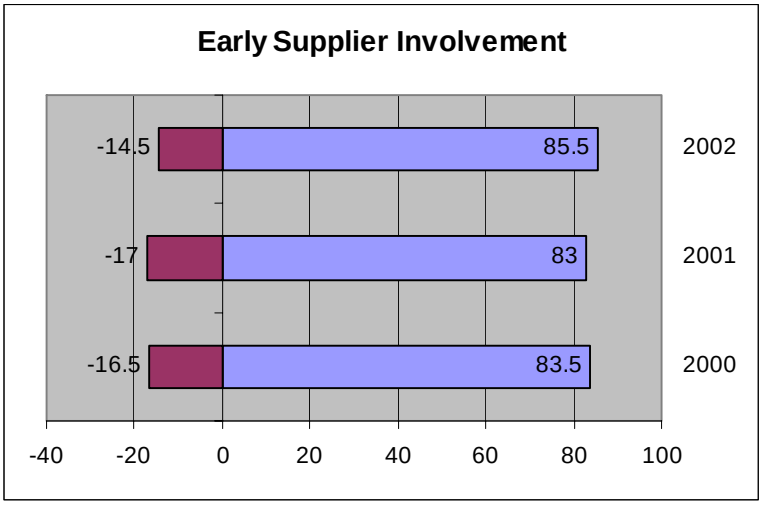

Fig. 35. Early supplier involvement disagree/agree – average level trend.

When ESI is working well, suppliers consider the benefits to be able to develop products, enabled to provide input into the project in an early stage, to optimise their production plan and reducing cost. Maximising use of resources and having the opportunity to be at the forefront of technology are considered also as major benefits of ESI. Open-ended answers gave also very positive comments of successfully implemented projects with ESI included. Supplier got feeling that their specialists are able impact to product design in order to make more manufacturable or less costly.

From 'the company' point of view ESI is very strategic issue in order to define how products are made and how technology forefront is maintained. ESI is question to 'the

company' whether it want to discover, create and make everything by itself or take a benefit by co-operating with suppliers, who are technology experts in their own special area.

Operational management of ESI is challenging. Successful implementation depends on people and their attitudes. Message of ESI benefits must be clear for both personnel of 'the company' and suppliers as well as processes and tools need to support ESI type of work.

As a satisfaction element ESI more abstract than concrete having many dimensions. ESI can be hard to implement, because implementation starts from the right mind set, but successful implementation thanks both parties. So we can claim that ESI has impact on supplier satisfaction.

3.3.2 Supplier satisfaction dimensions

As a conclusion it is possible to say that dimensions described in the survey are reflecting and measuring supplier satisfaction. Agree/disagree statements are showing if 'the company' is thinking and heading to same wish state than suppliers as such. Comparing 'the company' to its competitors, when competing supplier's respect and services, 'the company' can read the exact statement level. Open questions with written answers are telling details from specific issues or incident. It doesn't necessary need to be a big incident that reflects to whole business relation.

Table 4. Supplier Satisfaction Dimensions.

Business Related Dimensions	Communication Related Dimensions
Profitability	Roles & Responsibilities
Agreements	Openness & Trust
Early Supplier Involvement	Feedback
Business Continuity	'The Company' Values
Forecasting/planning	

As listed in table 4 this study presents nine supplier satisfaction dimensions, which can be grouped under the two topics: Business related dimensions and communication related dimensions. Business related dimensions are hard, fact based values, when communication related dimensions are more soft, human based values.

Business related Supplier Satisfaction Dimensions

Profitability and agreements are key issues for every business relation. Business needs to be profitable for both parties. This means that for example pricing and payment terms need to be fair. Agreements are in place and cover all needed issues. Also both parties need to follow the commonly agreed rules and procedures.

Early Supplier Involvement (ESI) starts from the attitude as discussed earlier in results review section. What makes it more hard, fact based dimension than soft-based dimension is its way of operating and targeting to cost effective, better quality and manufacturable end result.

Business Continuity and Forecasting & planning has long and short-term dimensions. Starting from short term, being weekly-based demand visibility or even hourly based inventory driven visibility and continuing from monthly, quarterly to yearly-based forecasts. Short-term forecasts are easy to share with numbers, but when expanding the time zone the reliability of numbers decrease. This is reason why business continuity dimension is also needed when measuring supplier satisfaction. It covers future issues not only by numbers, but also by technology, project and industry wise. When sharing and understanding the common picture of the future both 'the Company' and suppliers are able to make decisions, investments according to them. It is shared risk management.

Communication related Supplier Satisfaction Dimensions. Communication related supplier satisfaction dimensions measure how comfortable it is to work with 'the Company'. Roles & Responsibilities specify the organizations and persons with whom the suppliers should work with. It also specifies the communication tools and their existence. Honest & Trust dimension goes even deeper to the people's professionalism in behaviour and how things are taken care of are again very personal, subjective questions, but evident questions, when trying to measure the supplier satisfaction.

Feedback can be both hard and soft based. Starting point is to share how the things are doing and have feedback function in place. Hard based feedback can be numerical statistical feedback of quality performance, delivery accuracy etc. When adding comments about how the supplier would like to get the feedback and what kind of feedback it would like to get, we are back to soft area. Survey results has given excellent evidence that the suppliers are also coming more and more demanding of what kind of feedback they want as well as how when business relation is getting older and stabilized. Also suppliers have started to make questions, what we could do differently in order to be better supplier for 'the Company'.

'The Company' values are interesting dimension. It's a backbone for whole company, its culture, behaviour etc. 'The Company' values are: customer satisfaction, respect for individual, achievement and continuous learning. Customer satisfaction is to discover the customer needs, bringing value to the customer and respecting and caring for the customer. Respect for the individual means open and frank communication, fair treatment on all occasions, dependence on each other and mutual trust and acceptance of diversity. Achievement is to have shared vision and goals, responsibility, the will to fight in order to win and appreciation. Continuous learning means innovativeness and courage, support to grow and acceptance of failure, no place for complacency and humble and open mind. (Nokia Intranet, Nokia Mobile Phones Quality Guide – Nokia Values, 2002)

As 'the Company' values are something, which 'the Company' has agreed to cherish in its all functions and operations it is important also for 'the Company' to understand through external eyes how well values are fulfilled among 'the Company's' sourcing people. Survey results gave over 95% agreement levels for fulfilment of 'the Company' values. This is interesting observation, how strong role 'the Company' values has in behaviour and 'the Company's' way of operating. As a supplier satisfaction dimension, when suppliers share the same values also the satisfaction level is higher.

As defined in chapter 2.1.6 the current literature mention money, time, long-term relationship, communication, quality, trust, commitment, innovation and flexibility as the elements of supplier satisfaction concept. How these elements are inline with dimensions defined in this study? Following pairs can be found as presented in table 5:

Table 5. Supplier Satisfaction Dimensions compare to supplier satisfaction elements defined by current literature.

Supplier Satisfaction Dimensions defined in this study	Supplier Satisfaction elements definend by current literature
Profitability	Money
Agreements	Commitment
Early Supplier Involvement	Quality, Innovation
Business Continuity	Long-term relationship
Forecasting/planning	Flexibility, Time
Roles & Responsibilities	Communication
Openness & Trust	Trust
Feedback	Communication
'The Company' Values	-

This study doesn't only present the set of dimension, but also gives justification for them. When earlier literature have presented several different viewpoints towards supplier satisfaction, this study didn't only list them, but also modified, verified and added dimensions to best fit the problem.

Company values don't get the pair from the supplier satisfaction elements provided by literature. Even the based on study results company values are highly appreciated. Company values are also surprisingly visible to the suppliers and from the result point of view company acting according its values has rates starting up from 90% agreement statements. Company values have been defined as communication related issues, which can be also called soft- based issues. This study presents importance of soft-based issues. When previous literature talks about communication and trust, this study split the issue to more manageable and measurable topics. For example suppliers would like to get more regularly feedback (20/80 disagree/agree % in survey3) and according to results the most wanted types of feedback would be how 'the company' rates the supplier against the other suppliers and regular reports including quality and delivery data.

Under the trust the most critical question is if all necessary information is shared. This question has got all the time more criticism, which can be explained that surrounding business environment is every day harder and also continuous supply chain development with active supplier participation (like these surveys). When talking about roles & responsibilities interesting change can be seen in survey results. Survey 2 brought out ethics, but survey3 key message is quickness in responses and professional interaction. This is good evidence reflecting that 'the company' personnel has concrete communication and problem solving competences in place.

Profitability based questions are clearly focusing money issues as mentioned earlier in this chapter. Profitability is also something, which suppliers can compare between their customers and choose with whom they want to make business with. Agreements are used to make supplier relation official and legally binding. Survey results comment that agreements don't necessary cover all needed issues. When new technology/service is introduced by the company, it can be so much different from the existing base that agreement templates doesn't support it or the some aspects are notified after having the new service/

technology being in use some time. However this is continuous follow up place for 'the company'.

Early supplier involvement (ESI) is item that 97% (survey3) of suppliers agree that ESI is beneficial to them and 83% (survey3) of suppliers agree it is also working in practice. ESI is also the topic, where the differences between different technology groups can be seen. Mechanics being the most successfully implementing ESI in practice (survey3 results). Business continuity is tricky area since it is very critical to the company to decide which information of the future can be shared and how it would be shared in a way that it won't be misinterpreted. Survey3 worst scores in the disagree/agree level were 25/75 %, which means that the topic has still room for improvement. Forecasting and planning is asking how well forecasting tools are implemented and how well those support the need. Remarkable improvement can be seen in results, after 'the company' introduced the new tool set and its roll out covered the major part of the suppliers. Comparing survey2 and survey3 the forecast reliability improved 20 points and weekly demand visibility 23 points.

3.3.3 Re-reviewed definition of the supplier satisfaction

As defined in chapter 2.1.7 the supplier satisfaction was considered in this study as implementing the supply chain without any consequences. It is not limited to any kind of supplier relationship types or other limiting factors or conditions in business relations.

As a result of this study supplier satisfaction can now be defined in more details. Supplier satisfaction is implementing the supply chain smoothly, without any consequences. In order to be able to make that happen both hard and soft-based supplier satisfaction dimensions need to be in place and performed on satisfactory level. This level will be specified the buyer company. These supplier satisfaction dimensions are: profitability, agreements, early supplier involvement, business continuity, forecasting/planning, roles & responsibilities, openness & trust, feedback and 'the company' values. In supplier satisfaction measurement all of the dimensions are measured against the business and process environment of the buyer company.

The biggest difference to existing literature and knowledge of the topic is that this study has wider scope. It aims to explain the supplier satisfaction framework as well as the detailed dimensions, which reflect to supplier satisfaction. The existing literature has so far presented only focused aspects covering one or two dimensions explaining the correlation with supplier satisfaction. This study offers a multi-dimensional, overall viewpoint to supplier satisfaction. In order to make it a useful definition the supplier satisfaction framework has described, and a supplier satisfaction measurement as a management tool has been created and described as the result of this study. A wider scope and practical approach as a useful tool gives this study added value to both the academic and business worlds.

4 Scientific contribution of the study

Chapters 4.1-4.3 discuss theoretical implications from the different viewpoints and against different criteria. This gives scientific justification to the results of the study so that they also meet scientific requirements. Chapter 4.4 discusses the managerial implications of the study results and how 'the company' benefits from the study.

4.1 What was done and how against requirements of concept analytical research

As stated in chapter 1.3 research objective the biggest challenge in of the study was to define supplier satisfaction. According to Olkkonen (1993) the contribution of the concept analytical research is to provide a *beneficial solution* to a *topical and generic problem.*

Topical and generic problem. As a result of the literature review it is fair to say that current scientific and business society does not have one clear, commonly agreed definition of supplier satisfaction. Development of supply chain management and the competing business environment clearly needs new concepts to improve performance and supplier satisfaction is one.

Beneficial solution. The concept analytical part of this study defined the concept/ framework of supplier satisfaction by analysing and reasoning the existing literature, interview and brainstorming sessions' results. As a beneficial solution the supplier satisfaction definition was used later in the constructive part of the study where the supplier satisfaction elements and measurement were defined.

4.2 What was done, and how, against the requirements of constructive research

The ultimate target of the whole supplier satisfaction project was to measure supplier satisfaction. The project owner 'The Company' decided the measurement mechanism to be survey. This formulated the research problem and further the research objective.

In the supply chain we have seen satisfaction measurement in place when asking customers whether they are satisfied with the supply they are receiving. Now 'the Company' wants to additionally ask are you satisfied when supplying to 'the Company'. Customer satisfaction measurement and surveys are widely covered in the literature and it is also commonly used among companies, but literature to cover supplier satisfaction is very limited.

In order to measure the supplier satisfaction, 'the Company' needs first to understand the definition of supplier satisfaction. As learnt from the literature review there was no such unambiguous definition available nor any ready copy-paste survey for measurement.

The scientific contribution of the study will be reviewed according to the requirements which Kasanen *et al.* (1991) described in their paper on constructive research.

Not every problem solution fulfils the requirements of scientific research. To tie the problem to the existing knowledge and to present a solution/construction which has novelty value and is usable, are requirements for constructive research. Figure 36 describes the components of constructive research. (Kasanen *et al.* 1991)

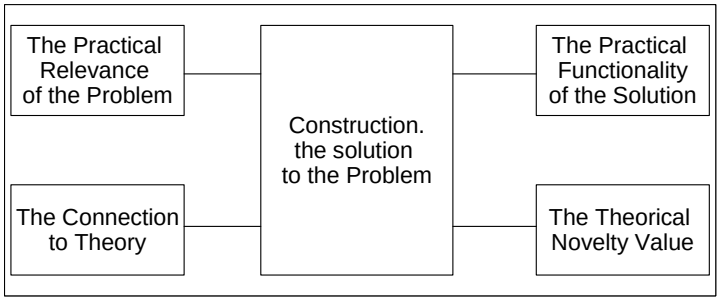

Fig. 36. The components of Constructive Research (Kasanen *et al.* 1991).

In the business world to find a practical solution is not as obvious as could be thought at first glance. Successful implementation consists of complex organizational processes, which could be seen as politics, power game, change resistance etc. Technical success of the construction is not the same as successful implementation in practice. (Kasanen *et al.* 1991)

The components of Constructive Research in this research. The practical relevance of the problem is clearly visible in this research, when 'the Company' made the initial request for the construction. The connection to theory is a wider area. As presented in chapter 2 supplier satisfaction is a clear next step in the development of supply chain management. It has also other crossing elements in supply chain management like partnership and quality management. An analogy between supplier satisfaction measurement

and customer satisfaction can be found from the measurement mechanism when defining satisfaction items and survey questions. An analogy between supplier satisfaction measurement and the 360^{o} feedback model can be also found when defining satisfaction items.

How has the presented solution/construction novelty value and use? The value of this construction is obvious to 'the Company'. Novelty value comes when we reflect the construction and its elements to the existing literature. As an outcome this research has specified supplier satisfaction dimensions, built up the survey as a management tool and presented a supplier satisfaction model.

Kasanen *et al*. (1991) recommend validating the construction in a two-phase market test. To start with a weak market test, which can already be found very challenging and continue with a strong market test.

Weak Market Test. Has an independent profit centre or company manager been ready to use the construction in their decision-making process?

Strong Market Test. Have the profit centre's or company's financial results improved after taking the construction into use? Can we say that financial results are better in the companies using the construction?

Weak market test in this research. The starting point for this research was that 'the company' wanted to improve and further develop its internal processes and external processes with suppliers and partners in the supply chain network. Supplier satisfaction was selected as a performance measure. So the customer was already available for the research. The challenge in that phase was more in the technical success of the construction than to sell the construction to the organisation.

Strong market test in this research. 'The company' has now carried out the supplier satisfaction survey three times, which is already evidence that this study contributed a usable construction. Results have given valuable information to 'the company' on how to further develop its sourcing activities. The supplier satisfaction survey is working in practice like a management tool. Also other business units of 'the Company' have been asking to use this supplier satisfaction survey as a base line in their own surveys.

An interesting discussion/speculation at this point is how to measure how the construction has effected the sourcing function's financial results. Figures are company confidential information, but something can be said. Increased competitiveness is a result of the construction and that also has an impact on 'the company's' financial results. Improved competitiveness is a key thing in the sourcing function, when the market situation is getting harder and competition is ruthless. The sourcing function needs not only good and professional negotiators (like purchasing managers) but also its processes and relationships, both internally and externally, need to be on the world-class level. Supplier Satisfaction measurement has pointed out to 'the company's' management which are the areas to focus on in the supplier relationship and which make the every day business more fluent and efficient. This leads to more reliable delivery from suppliers to 'the company'. Basic sourcing elements such as cost, availability on requested amount and time, quality is in place. Supplier satisfaction is also the same as listening to your supplier, which places the relationship more on a two-way mode. Win-win –situations are valuable for both parties and it becoming a more and more common approach. The strong market test type of test: how the tool effects financial figures is recommended as a topic for further studies in chapter 5.

4.3 Scientific contribution of the research through common scientific research requirements

Another way to review the scientific contribution of the research is through common scientific research requirements, which are objectiveness, criticism, autonomy and furtherance. To have fruitful science, it's not only to find a solution to a problem, but also to create new problems. (Kasanen *et al.* 1991)

Objectiveness, Criticism and Autonomy in this research. The question is to understand how to cross-check that the creation steps of the construction contain features from objectiveness, criticism and autonomy. Cross-checking ensures that anyone could independently repeat the process and end up with the same result.

Objectiveness, criticism and autonomy from the start have been the key words. Already 'the company' stated in the project set up that measures/results need to be reliable and suppliers have confidence in participating in the survey. Survey facilitation was implemented by using an independent research company and to maintain the anonymity.

When defining the supplier satisfaction dimensions, objectiveness was the driving feature. 'The Company' did not only want to have its own supplier satisfaction dimensions, because then some essential dimension(s) might have not been noticed. The process to define supplier satisfaction was covered as presented earlier in the literature study, brainstorming and interviewing. A literature study, to find out if such a commonly agreed definition of supplier satisfaction already existed that could be used in 'the company' was carried out. Literature was used to also create the framework to build up a supplier satisfaction definition and measurement forward. Interviewing the suppliers, to avoid subjective interpretation from the literature and brainstorming sessions was done.

Furtherance in this research. Furtherance means here that the created construction, as such, leads us to new problems and questions even if one problem is solved.

Theme surveys are evidence of furtherance. The general survey does not necessarily give quickly enough the information of how successful the implementation project has been for certain improvement issues. The general survey generated theme surveys to quickly support the measurement of performance and if 'the company' is going in the right direction, briefly how happy/ satisfied the suppliers are.

4.4 Managerial implications of the study

Another large discussion item under the furtherance topic is how 'the company' *really* could take most the value from the supplier satisfaction measurement. This study presented the supplier satisfaction survey as a management tool. The focus areas for each survey come from the management and results are later used as inputs for strategic planning and as actions in everyday business. The next steps from here could be how to automate the satisfaction surveys to be real time activities and how to ensure the follow-up in a way that the supplier satisfaction survey is not a once a year activity, but it would be a part of the everyday relationship with suppliers.

The challenge to have the supplier satisfaction measurement as a part of everyday business can be answered with the survey as a management tool approach. When the supplier satisfaction dimensions stay the same, the external and internal business environment will change. Processes and procedures need to follow-up business environment changes. This requires continuous process management as well. The supplier satisfaction survey can be then used as a process measure. The survey can also be used to measure limited entities. If processes are right and followed-up, end result is satisfied suppliers. This way the supplier satisfaction survey can be used to further develop the company and supplier networks around it.

5 Recommendation for further studies

This study defined supplier satisfaction as a management tool, as well as what is the definition of supplier satisfaction. To make this tool more useful and effective for the business environment and more acceptable in the academic world the following recommendations can be made for further studies.

In this study the case environment has been a single company. However the case company has business globally. It has several sites all over the globe and its monthly manufacturing volumes are in millions of units. In many cases it is the biggest customer for its suppliers. This makes the magnitude of the case company unique. It requires further studies to get confirmation that the tool presented in this study can also be used in other smaller local or regional companies, that may have some specific requirements. The cultural sensitiveness needs also further considerations, when companies are located in different continents and regions.

What are the differences or are there any if these case, how sensitive is this tool for cultural differences for example.

Another interesting research area is to study how much taking this tool into use affects the company's financial figures and stock value, not only the effectiveness of the way of operating in the company.

In this study the case company had a wide supplier base, which gave a lot of statistically valuable information as survey results. A researcher-challenging study could be to duplicate the study model for ten plus companies and at the same time the increase in survey participants would jump from hundreds to thousands, providing so much statistically valuable information that further generalizations could be made.

6 Summary

There is an important difference between thinking about human behaviour and doing research. Research is a careful, patient, and methodical inquiry done according to certain rules. It is not simply an exchange of views among friends, colleagues, or experts. Good data provide an antidote to anecdote. (Sommer & Sommer 2002)

This study had two clearly different tasks: define supplier satisfaction and create a supplier satisfaction survey with the right questions to be used as a management tool. Also two different research approaches were used to complete the tasks. The concept analytical research approach was used to define supplier satisfaction. This definition was then used in other part of the study, which covers the survey creation and modelling of the management tool. Constructive research approach was chosen for use as a major research approach. According to Olkkonen (1993) it is very common that studies have two research approaches. The concept analytical research approach is used to establish the basic definitions of the study, regardless of the major nature of the study (Olkkonen, 1993).

Satisfaction has been defined as a pleasant feeling. So far public literature has presented very little on the of concept of supplier satisfaction. Usually articles or studies are concentrated within a certain theme like loyalty, attitude, etc. Money, time, long-term relationship, communication, quality, trust, commitment, innovation and flexibility are the elements for the supplier satisfaction concept that the current literature offers for this study. Based on the results of the literature searches it is justified to comment that Supplier Satisfaction is one of those tricky things that have several definitions. There has been discussion about it about for 20 years now, but no official, theoretical definition was available. In this study Supplier Satisfaction has been considered

- As an element of supply chain management including partnership and quality management,
- As an analogical element with customer satisfaction including marketing research and
- As analogical approach with 360° methodology.

Studying and understanding the supply chain management gave a base line to the supplier satisfaction definition. The analogy to customer satisfaction measuring and the 360° feedback model were used mainly for the survey creation by understanding the theories

and building up commonalities between supplier satisfaction measurement and customer satisfaction as well as supplier satisfaction and the 360° feedback model.

The process for creating the supplier satisfaction survey is based on problem-solving methods. Methods were used to describe the reasoning steps and types of knowledge which are needed to perform a task with knowledge-based systems (Fensel 2000). The process steps were: project set-up, questionnaire creation, survey facilitation, result analysis, learning points, second survey future plans. Typically each of the steps had several sub-steps.

As a result of this study supplier satisfaction was defined. Supplier satisfaction is implementing the supply chain smoothly, without any adverse consequences. In order to be able to make that happen both hard and soft-based supplier satisfaction dimensions need to be in place and performed on satisfactory level. This level will be specified by the buyer company. These supplier satisfaction dimensions are: profitability, agreements, early supplier involvement, business continuity, forecasting/planning, roles and responsibilities, openness and trust, feedback and 'the company' values. In supplier satisfaction measurement all of the dimensions are measured against the business and process environment of the buyer company.

The supplier Satisfaction Survey as a management tool for a company to improve and further develop its internal processes and external processes with suppliers and partners in supply chain network was also presented in the study. The survey aims to address both the business and communication-related aspects and will aim to measure the quality of the relationship between supplier and 'the company' in terms of how the supplier views 'the company'. The results will highlight the areas where a supplier and 'the company' have together invested resources to improve key processes, but also identify areas where is still room for improvement. The survey results are inputs for the strategic planning of the company, as well as everyday operations and behaviour.

The scientific contribution of the study was examined against the requirements of the concept analytical research, constructive research and common scientific research requirements. Concept analytical research requires a beneficial solution to a topical and generic problem, which both could be found from this study: a supplier satisfaction definition and measurement system was needed to improve supply chain performance. The weak market test as a requirement of constructive research was fulfilled, as the case company has used the survey already three times. Common scientific research requirements are objectiveness, criticism, autonomy and furtherance. Anyone should be able to independently repeat the process and end up with the same result. These were key elements from the very beginning of the study and required by the case company, too. Furtherance is the key to evolution and also this construction has new challenges to offer for future studies such as how much supplier satisfaction directly effects business figures.

It is excellent to notice that the supplier satisfaction survey as a management tool has been taken up in 'the company' with such a high level of commitment. 'The company' being an example to its suppliers and competitors, after a couple years supplier satisfaction surveys will be commonly used tool.

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Appendices

Appendix I

Face to face interview results.

1. How do you define supplier satisfaction in generally?			
BUSINESS	***ROLES AND RESPONSIBILITIES***	***OPENNESS***	***OTHER***
• Growth potential • Long term profitability (business) • Co-operation, developing together the vision and actions • Win-win situation	• Clear leadership (clear organization behind), role and responsibilities • Both direction support • Team building	• True partnership (not lowest price supplier) • Openness in all levels (essential in business relationship), open atmosphere (play with open cards), confidentially (total trust pricing, specs, volumes), easy to discuss • Co-operation developing together the vision and actions, win-win situation	• Fun
2. What kind of elements supplier satisfaction includes?			
BUSINESS	***ROLES AND RESPONSIBILITIES***	***OPENNESS***	***OTHER***
• Purchasing orders on time • Co-operation developing together the vision and actions • Profitability • Reputation (good reputation, good customer)	• People behaviour • Feedback • Support from the customer (introduction of new technology, logistics, material) • Quality	• Trust, fairness in business relationship • Information/ forecasting (LRP, DSP) • Openness (future issues, programs, LRP's) • People behaviour • Openness between other suppliers (price competitiveness) • Co-operation developing together the vision and actions • Feedback • Support from the customer (introduction of new technology, logistics, material)	• Timing (CAD files), lead times
3. Examples of good and bad experiences in terms of supplier satisfaction? GOOD EXPERIENCES!			
BUSINESS	***ROLES AND RESPONSIBILITIES***	***OPENNESS (Communication, Trust, Forecasting)***	
• Business opportunity • Supplier partnership • Pay on time • Long term business relationship • 'The company' invests in new technologies and materials… toolings • Good reputation	• Support from customer • Co-operation • Understand differences between people and jobs • People know each other	• Direct communication, clear communication channel • Fair feedback • Support from customer • Co-operation • Employees like and show support towards 'the company' (commitment) • Understand differences between people and jobs • People know each other	
4. Biggest Barriers and Problems in terms of Supplier Satisfaction?			

BUSINESS	***OPENNESS (Communication, Trust, Forecasting)***
• Pricing • Profitability • Bureaucracy • Unclear state of supplier (what next?)	• Communication in global environment (no common agenda) • Cultural differences between the nations (Americas, China, Japan) • Trust • Open Feedback • ESI (Early Supplier Involvement) • Roadmap • Changes

5. Do you have any activities towards supplier satisfaction for your own suppliers or /and you as a supplier to a customer?

- Some factories have vendor's day
- Development discussions with some key suppliers
- Continual mutual feedback
- One supplier has survey as a part of the ISO 9000 standard: 1. Are requirements acceptable 2. Pricing 3. Delivery

6. What are the benefits of a satisfied supplier to the customer?

BUSINESS	***ROLES AND RESPONSIBILTIES***	***OPENNESS (communication, Trust, Forecasting)***	***OTHER***
• Better quality through the process • Profitability • Active and motivate development business • Efficient • Conflicts costs money, time etc • Loyalty (priority, capacity, flexibility)	• People to people relationship	• Openness • Better co-operation, share ideas and technologies with customers	• Flexibility • Taking care of needs • Trust • Seamless, fluent logistics supply chain (from raw materials to customers)

7. How the following elements affect to supplier satisfaction from the supplier point of view?

DISTANCE

- Helps to be as close as possible
- Regional implications not local
- No theoretical implications
- Timezones cause extra work
- Effects logistics
- Sometimes it is more convenient to talk face to face

OWNERSHIP

- Easier to work with public company
- Private company might be too personal
- Stable ownership (long term trust)
- No meaning
- Private company limiting

PROFITS, PAYMENTS

- Very important, affects to long term relationship
- Payment accuracy important

If company is capable to meet quality and other requirements, they are allowed to ask good profit for that (supplier has big investments and high risks)

Appendix I/3

MERCHANDISE (Service or component)

- No meaning
- Physical merchandise is easier to measure than eg. Software
- Nice to work with challenging and fascinating products

PRODUCT LIFECYCLE

- The longer the better
- Continuity (new things motivates)
- If lifecycles are shortened, there is need to develop co-operation
- Ramp ups, ramp downs are critical
- Difficult to control

MARKET SITUATION, ECONOMIC TRENDS

- Competitive customer has priority
- Of course growing business motivates

SUPPLIER-CUSTOMER RELATION

- Better you know each other more satisfied you are
- Strong impact
- Target state: partnership
- Conflicts prevent development
- Early information sharing

'THE COMPANY' INTERNAL MOVEMENTS AND REFLECTIONS

- Changies are vital to improvement, but they should be communicated clearly to understand the purpose
- Not a major issue

CULTURE

- Important to have common way of doing business
- Very important
- No cultural differences/changes inside 'the company'(successfully trained through 'the company'. It makes easier to work with 'the company'.
- Values in place
- Company culture either makes it easier or more difficult to co-operate
- Not very important

NETWORK VS SEPARATE COMPANY

- In terms of size of the business, being part of the network would be more enjoying and better ESI (Early Supplier Involment)
- Extremely critical regarding supplier satisfaction
- Creates trust
- Very important and essential implication, hear information earlier, know people better, involved early in projects
- Involvement also in long term management level planning
- Certainty of the future, time to be proactive

STABILITY

- Important
- Makes supplier happy
- Long term business objective
- Stability, stable growth, forecasting, decision making easier
- Medium importance
- If they provide good products with the right timing, they survive in the market

MULTILEVEL CO-OPERATION

- Important
- Personal relationships important in all levels
- Not repeating too much!

COMMUNICATION

- Important
- Clear communication channel
- Change information early enough
- Common project management tool (synchronise tools, lessons learnt), Fluent information flow essential

BETTER TIMING

- Important, but less than ESI
- Important to meet schedules

8. Miscellaneous issues in the interview discussion

- Program delays cause dissatisfaction
- All level communication important
- Good: 'the company' quick decision maker
- 'The company's internal structure not so obvious for outsiders
- Important to work with world leader of the industry
- Important to have an open dialogue about cost savings (win-win)
- Close relationships makes it easier to understand 'the company' culture
- Strategic side of the supplier satisfaction
- Important to understand customer's roadmap
- Technologies involved in the future

• ESI

- Access to all organizational levels in Nokia
- Different customers and new subcontractors cause problems
- 'The company's' life style is different; personnel is very young (e.g. behaviour), open minded, straight forward
- 'The company's' role important in motivating supplier's people

Appendix II

Draft v1

SUPPLIER SATISFACTION SURVEY

At 'the company we are continuously seeking to improve the relationship we have with our suppliers. In order to help us improve our relationship with you and your company, we would be grateful if you could take a few minutes to complete and return this questionnaire.

The questionnaires will be analysed collectively by an independent market research company, NN, and your individual answers will be treated in the strictest confidence.

A. For the first set of questions, please tick one box in each row, which most applies to your company.

1. In which area of technology does your company specialise?	*Electronics* ☐	*Electromechanics* ☐	*Mechanics* ☐	*Accessories* ☐	*Software* ☐
2. In which area(s) do you supply your product/service to?	*Global* ☐	*Europe & Africa* ☐	*Americas* ☐	*APAC* ☐	
3. What size is your company?	*Small (1-100 personnel)* ☐	*Mid (101-1000 personnel)* ☐	*Large (1001-> personnel)* ☐		
4. Please state the ownership of your company.	*Private Company* ☐	*Public Company* ☐			
5. How long have you been a supplier to 'the company'?	*Up to 2 years (1st project introduction phase)* ☐	*2 - 3 years* ☐	*3 - 5 years* ☐	*Over 5 years (mature phase)* ☐	

6. Please describe below any critical events that have affected your business relationship with 'the company'. (Please use a separate sheet if necessary).

_____
_____
_____
_____
_____

B. For each of the following statements, please tick the appropriate box to show how much you agree or disagree with each one **AND** please state how you view 'the company' in comparison to your best customer, by ticking the appropriate box in each row.

	How strongly do you agree or disagree?				**How does 'the company' compare to your best customer?**				
BUSINESS	*Disagree*	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
PROFITABILITY									
7. Business with 'the company' is profitable.	☐	☐	☐	☐	☐	☐	☐	☐	☐
8. 'The company' is paying according to agreements.	☐	☐	☐	☐	☐	☐	☐	☐	☐
9. Payment terms are fair.	☐	☐	☐	☐	☐	☐	☐	☐	☐
10. Pricing is fair.	☐	☐	☐	☐	☐	☐	☐	☐	☐
AGREEMENTS									
11. Written agreements cover all needed issues.	☐	☐	☐	☐	☐	☐	☐	☐	☐

12. If you 'partly disagree' or 'disagree' that written agreements cover all needed issues, please explain below why you say this.

_____
_____
_____
_____
_____

	How strongly do you agree or disagree?				How does 'the customer' compare to your best customer?				
	Disagree	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
13. The agreements are fair.	☐	☐	☐	☐	☐	☐	☐	☐	☐

14. If you 'partly disagree' or 'disagree' that the agreements are fair, please explain below why you say this.

_____
_____
_____

	How strongly do you agree or disagree?				How does 'the customer' compare to your best customer?				
	Disagree	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
15. 'The company' is keeping agreed commitments.	☐	☐	☐	☐	☐	☐	☐	☐	☐

16. If you 'partly disagree' or 'disagree' that 'the company' is keeping agreed commitments, please explain below why you say this.

_____
_____

EARLY SUPPLIER INVOLVEMENT (ESI)

17. Please define your understanding of ESI. (Please use a separate sheet if necessary)

_____
_____
_____

	How strongly do you agree or disagree?				How does 'the customer' compare to your best customer?				
	Disagree	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
18. There is common understanding of ESI between 'the customer' and us.	☐	☐	☐	☐	☐	☐	☐	☐	☐
19. ESI is working in practice.	☐	☐	☐	☐	☐	☐	☐	☐	☐
20. ESI is commonly used.	☐	☐	☐	☐	☐	☐	☐	☐	☐

21. If you feel that there are any possibilities for improvement, please outline and explain them below.

_____
_____
_____

	How strongly do you agree or disagree?				How does 'the customer' compare to your best customer?				
	Disagree	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
22. We see ESI as beneficial to us.	☐	☐	☐	☐	☐	☐	☐	☐	☐

23. If you 'partly agree' or 'fully agree' that ESI is beneficial to you, please specify the benefits.

_____
_____
_____

	How strongly do you agree or disagree?				How does 'the customer' compare to your best customer?				
BUSINESS CONTINUITY	*Disagree*	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
Future project needs are known with 'the company' in terms of:									
24. Volumes	☐	☐	☐	☐	☐	☐	☐	☐	☐
25. Technology	☐	☐	☐	☐	☐	☐	☐	☐	☐
26. Schedules	☐	☐	☐	☐	☐	☐	☐	☐	☐
27. Long term direction is available.	☐	☐	☐	☐	☐	☐	☐	☐	☐
FORECASTING/PLANNING									
28. Volumes are forecasted systematically.	☐	☐	☐	☐	☐	☐	☐	☐	☐
29. 'the company' forecasts are reliable.	☐	☐	☐	☐	☐	☐	☐	☐	☐
30. We receive a demand visibility weekly.	☐	☐	☐	☐	☐	☐	☐	☐	☐
31. We receive a rolling forecast monthly.	☐	☐	☐	☐	☐	☐	☐	☐	☐
32. We receive a long range volume plan twice a year.	☐	☐	☐	☐	☐	☐	☐	☐	☐
33. 'the company' New Business Models for logistics are known.	☐	☐	☐	☐	☐	☐	☐	☐	☐

	How strongly do you agree or disagree?				How does 'the customer' compare to your best customer?				
COMMUNICATION	*Disagree*	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
ROLES AND RESPONSIBILITIES									
34. Clear contacts and communication channels are available.	☐	☐	☐	☐	☐	☐	☐	☐	☐

35. If you 'partly disagree' or 'disagree' that clear contacts and communication channels are available, please explain how you would like to see these improved.

_____
_____
_____

	How strongly do you agree or disagree?				How does 'the customer' compare to your best customer?				
	Disagree	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
36. Common communication tools are available and agreed to use.	☐	☐	☐	☐	☐	☐	☐	☐	☐
37. 'the company' personnel are professional in their behaviour and work	☐	☐	☐	☐	☐	☐	☐	☐	☐

38. Please give examples of the level of professionalism in 'the company' personnel's behaviour and work.

_____
_____
_____

	How strongly do you agree or disagree?				How does 'the customer' compare to your best customer?				
OPENNESS & TRUST	*Disagree*	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
39. All necessary information is shared accordingly.	☐	☐	☐	☐	☐	☐	☐	☐	☐

40. If you 'partly disagree' or 'disagree' that all necessary information is shared accordingly, please state what information is not shared.

_____
_____
_____

	How strongly do you agree or disagree?				How does 'the customer' compare to your best customer?				
	Disagree	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
41. 'The company' keeps its promises.	☐	☐	☐	☐	☐	☐	☐	☐	☐
42. 'The company' people are honest towards you.	☐	☐	☐	☐	☐	☐	☐	☐	☐
43. 'The company' employees are reliable.	☐	☐	☐	☐	☐	☐	☐	☐	☐
44. Essential person to person relationships are available.	☐	☐	☐	☐	☐	☐	☐	☐	☐
FEEDBACK									
45. We get enough feedback from 'the company'	☐	☐	☐	☐	☐	☐	☐	☐	☐
What kind of feedback do you get?									
46. Quality	☐	☐	☐	☐	☐	☐	☐	☐	☐
47. Delivery accuracy	☐	☐	☐	☐	☐	☐	☐	☐	☐
48. Availability	☐	☐	☐	☐	☐	☐	☐	☐	☐
49. Other (please specify).									
1. _____	☐	☐	☐	☐	☐	☐	☐	☐	☐
2. _____	☐	☐	☐	☐	☐	☐	☐	☐	☐
3. _____	☐	☐	☐	☐	☐	☐	☐	☐	☐
50. We get feedback regularly.	☐	☐	☐	☐	☐	☐	☐	☐	☐
51. We see feedback fair and honest.	☐	☐	☐	☐	☐	☐	☐	☐	☐

In which format do you get your feedback? Please tick all that apply.

52. Face to face	☐
53. Written	☐
54. Without third parties	☐
55. Other (please specify)	
1. _____	☐
2. _____	☐
3. _____	☐

56. What sort of feedback would you like to get? Please give some examples.

_____
_____
_____

57. Please state any specific areas for improvement you would like to see with regards the feedback process.

_____
_____
_____

	How strongly do you agree or disagree?				How does 'the customer' compare to your best customer?				
	Disagree	*Partly disagree*	*Partly agree*	*Fully agree*	*NMP is the worst*	*NMP is average*	*NMP is among the best*	*NMP is the best*	*NMP is world leader*
58. We have functional channels to give feedback to 'the customer'.	☐	☐	☐	☐	☐	☐	☐	☐	☐

'THE COMPANY* VALUES are:

Customer Satisfaction
- Discovering Customer Needs
- Bringing Value to the Customer
- Respecting and Caring for the Customer

Respect for the Individual
- Open and Frank Communication
- Fair Treatment on all Occasions
- Dependence on Each Other and Mutual Trust
- Acceptance of Diversity

Achievement
- Shared Vision and Goals
- Responsibility
- The Will to Fight in Order to Win
- Appreciation

Continuous Learning
- Innovativeness and Courage
- Support to Grow and Acceptance of Failure
- No Place for Complacency
- Humble and Open Mind

C. Please rate how much you agree or disagree that the company values are fulfilled among 'the company' Sourcing People Please tick the appropriate box in each row.

'THE COMPANY' VALUES	**How strongly do you agree or disagree?**			
	Disagree	*Partly disagree*	*Partly agree*	*Fully agree*
59. Customer Satisfaction	☐	☐	☐	☐
60. Continuous Learning	☐	☐	☐	☐
61. Respect for the Individual	☐	☐	☐	☐
62. Achievement	☐	☐	☐	☐

SUMMARY

63. Please list the three most important areas you would like to see improved in 'the company' Sourcing and Procurement.

1. _____ _____

2. _____ _____

3. _____ _____

64. Please list three areas where you feel 'the company' Sourcing and Procurement is good or better than average.

1. _____ _____

2. _____ _____

3. _____ _____

65. How would you describe 'the company' Sourcing and Procurement in comparison to your best Customer's sourcing functions?

'' is the worst	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
☐	☐	☐	☐	☐

That's the end of the questionnaire.

THANK YOU for your time in completing the questionnaire.

Please return it in the pre -paid envelope provided to:

Appendix III

Cover letter model for postal self-completion survey.

Name
Job Title
Company name
Address 1
Address 2
Address 3
Address 4

August 2000

Dear Valued Supplier (or personalised to Mr. Joe Bloggs),

In the spirit of continuously seeking to improve the way in which 'The company' works together with your company, we are undertaking a "Supplier Satisfaction Survey".

This survey aims to address both business and communication related issues and will aim to measure the quality of our relationship in terms of how you view 'the company'. This will hopefully highlight the areas where together we have invested resources to improve key processes but also and more importantly identify areas where we still have room for improvement.

This survey is being conducted by an independent market research agency, NN, specialist in stakeholder satisfaction surveys. Your completed questionnaire will be analysed collectively with all completed questionnaires by NN and your individual responses will not be identified.

Our intention is to give you feedback of the results of this survey during the Autumn.

We value your feedback very much and thank you for taking the time to fill in this questionnaire.

Please return your completed questionnaire in the pre-paid envelope provided to NN International by Monday 28th August 2000.

Sincerely

XX
VP Sourcing and Procurement 'the company'

Appendix IV

Remimder letter model for postal self-completion survey.

Name
Job Title
Company name
Address 1
Address 2
Address 3
Address 4

August 2000

Dear Valued Supplier (or personalised to Mr. Joe Bloggs),

You may remember that a couple of weeks ago, we sent you a 'Supplier Satisfaction Survey' questionnaire asking for your feedback on your relationship with us.

We would be very grateful if you could return your completed questionnaire to NN in the pre-paid envelope provided by Monday 28th August at the latest.

Please be assured that your individual comments will not be passed back to 'the company', but that NN will analyse the results collectively.

If you have already returned your questionnaire, we would like to thank you for your time. Your feedback will be very valuable to us and will help us to identify ways in which our relationship with all our suppliers may be further improved.

Thank you for your time and co-operation in this important survey,

Sincerely

XX
VP Sourcing and Procurement 'the company'

Appendix V

COLLABORATE PLANNING

GENERAL

	How strongly do you agree or disagree?				How does 'the company' compare to your best customer?				
	Disagree	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
66. We see need for collaborative planning and process integration	☐	☐	☐	☐					
67. We see need for sharing the planning information by using an Web tool	☐	☐	☐	☐					
68. COPLA web-based tool gives value add for communication between You and 'the company'.	☐	☐	☐	☐	☐	☐	☐	☐	☐
FUNCTIONALITY									
69. We receive volume visibility through COPLA web-based tool.	☐	☐	☐	☐	☐	☐	☐	☐	☐

70. If you 'partly disagree' or 'disagree' volume visibility through COPLA web-based tool, please explain below why you say this.

_____
_____

	How strongly do you agree or disagree?				How does 'the company' compare to your best customer?				
	Disagree	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
71. The volume visibility we receive through the COPLA web-based tool is helping us in our own capacity planning	☐	☐	☐	☐	☐	☐	☐	☐	☐

72. If you 'partly disagree' or 'disagree' visibility through COPLA web-based tool to help us in our own capacity planning., please explain below why you say this.

_____
_____
_____

	How strongly do you agree or disagree?				How does 'the company' compare to your best customer?				
SUPPORT	*Disagree*	*Partly disagree*	*Partly agree*	*Fully agree*	*'' is the worst*	*'' is average*	*'' is among the best*	*'' is the best*	*'' is world leader*
73. We receive technical support to use COPLA.	☐	☐	☐	☐	☐	☐	☐	☐	☐
74. We know whom to contact in case of technical Support needs	☐	☐	☐	☐	☐	☐	☐	☐	☐
75. We receive training to use COPLA.	☐	☐	☐	☐	☐	☐	☐	☐	☐
76. We see that our own and 'the company's' business processes are well in line in order to successful using of COPLA.	☐	☐	☐	☐	☐	☐	☐	☐	☐

77. If you feel that there are any possibilities for improvement, please outline and explain them below.

_____
_____
_____

FUTURE

78. What kind of further expectations do you have for COPLA? Please outline and explain them below.

_____
_____
_____

79. What are the areas that you need system to system integration. Please give some examples.

_____
_____
_____

THANK YOU for your time in completing the questionnaire.

Appendix VI

Brainstorming team

Kess Pekka	Professor, University of Oulu
Lohiniva Pekka	Sourcing Manager, Mechanics SLM, Nokia Mobile Phones
Maunu Susanna	Sourcing Site Manager, Nokia Mobile Phones
Niskanen Jari	Process Manager, Mechanics SLM, Nokia Mobile Phones

AdditionalDiscussions

Geust JonasManager,	Materials Project Management, Nokia Mobile Phones
Jokinen Tauno	Quality Manager, Nokia Mobile Phones
Kolvanki Jouni	Material Project Manager. Nokia Mobile Phones
Korento Kati	Doctoral Thesis Worker, Nokia Mobile Phones
Kurtakko Miika	Sourcing Manager, Partnership, Nokia Mobile Phones
Salonen Petteri	Sourcing Manager. Early Supplier Involment, Nokia Mobile Phones

Brainstorming sessions and additional discussions were held during Dec.1999 and Jan.2000. Results were collected using an adding method where new issues were added on the top of the previous items.

Notes from the sessions:

Supplier Satisfaction
Culture

- Different cultures like Japan, China, Finland, Central Europe, USA
- Multinational companies and their internal company cultures
- F ex Perlos Oy and Perlos Inc., TI USA and TI France, Sanyo Japan and Sanyo Usa
- Cultural differencies inside Nokia due to different geographical and cultural locations.
- F ex today our suppliers can rank NMP's sites, which they prefer to co-operate with

Nokia Internal movements and reflections

- Nokia requirements, Business decisions, Strategies
- Nokia culture
- Supply strategies
- Supplier rating
- Cultural differencies inside Nokia due to different geographical and cultural locations.
- F ex today our suppliers can rank NMP's sites, which they prefer to co-operate with

Supplier Relationship (Partnership… distributors)

- How different business relationship effects to supplier satisfaction?
  Supplier status: potential, approved, preferred, face-ot, VIP group
  SPA (supplier Partnership Assessment), tool/draft

Commodity areas (Physical goods)… services… software

- How much bying item will affect to business relationship?
- Standard
- Customized
- Services
- Forwarding (transportation)
- Software
- Subcontracting

Lifecycle

- Historical aspect
- Future aspect
- Cross-profile in certain time
- Early Supplier Involvement ESI
- RT, CE, PE
- Changes
- Forecasting
- Manufacturing technologies
- Volumes

Ownership

- Changies in ownership
- Family companies vs listed/public company
- What happens if family company changes to public company
  Take over situations

Distance

- Geographical
- Time difference
- "Mental hygiene" -> culture

Separate company vs networks

- Horizontal and Vertical networks
- Subcontracting networks
- Action: define what kind of networks there already in the world?

Big picture: Little of everything

- Overview of all elements and viewpoints to supplier satisfaction

Method/ toolbox to measure supplier satisfaction

- Toolbox which takes in count all viewpoints for supplier satisfaction
- It's more probable that different view points create several measurements

Market situation, Economic trend

- Today we have "golden spoon in our mouth"

Internal customers

- Other functions/sites/cultures
- Processes

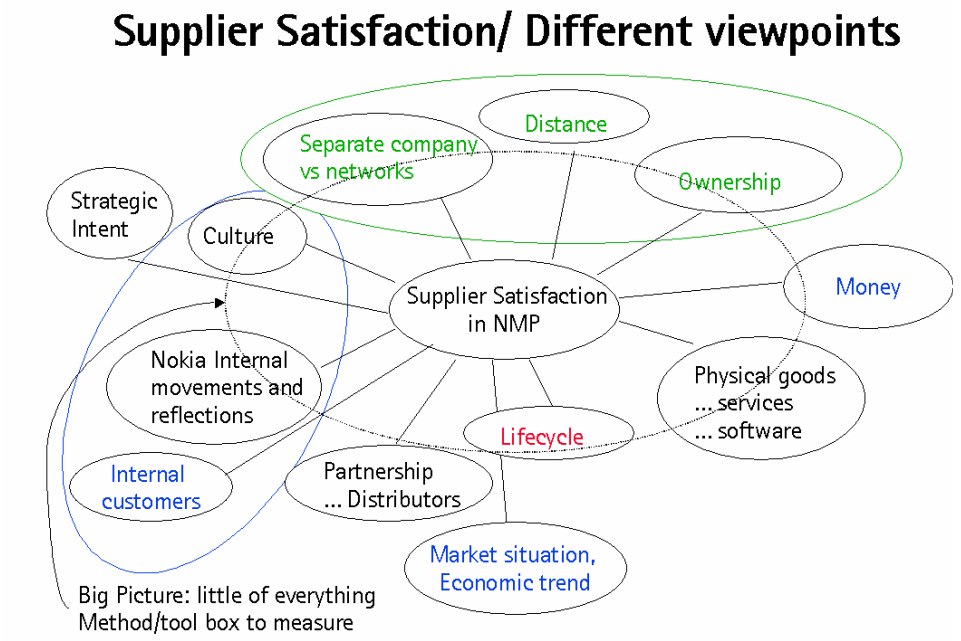
Money

- Are those suppliers most satisfied who makes best profit out of business with Nokia?

Strategic Intent

- Strategic Intents of companies need to meet in order to create supplier satisfaction or do they?

Discussion Diary
January 4. 2000 with Jouni Kolvanki: Money aspect
January 17. 2000 with Tauno Jokinen: Factory Analyses idea
January 18. 2000 with Kati Korento: Factory analyses contact and Sharing ideas of making doctorial thesis
January 19. 2000 with Jonas Geust: New "bubble" Strategic Intent of companies
Life cycle thinking to be back ground for the study (supply satisfaction motives differs when we are in product creation phase and product delivery phase.



Appendix VII

Face to face interviews were made all in March 2000.
SUPPLIER SATISFACTION SURVEY

INTERVIEW WITH COMPANY A

Interviewer: Ilkka Nurmi,

Present: Frank Mattson, Reinhard

1st PART

1. **How do you define supplier satisfaction generally?**
   - Fun to work with people
   - Clear leadership
   - Clear organization behind
   - Teambuilding
   - Friendly, open atmosphere
   - Easy to discuss (also about difficult subjects)
   - Challenging and positive

⇨ Good partnership

2. **What kind of elements does supplier satisfaction include?**
   - Speed
   - Openness
   - Quality
   - Fairness, trust
   - People (behavior)
   - Well prepared new projects
   - Well structured
   - Clear objectives by ‘the Company
   - Product
   - Challenging and fascinating product, that people are keen to work

3. **Examples of good and bad experiences in terms of supplier satisfaction?**
   Bad experiences:
   - New people do not understand ‘the Company’ culture
   - Do not see the "big picture" of a project, just their own part
   - Inexperienced

⇨ Direct impact on supplier
   - Multicultural mix of employees
   - High fluctuation within a project
   - Changes in a product and people involved
   - Long term experience is disappearing
   - People move to different projects fast
   - Usually problems come up when mass production begins
   - Project people are not available any more

   Good experiences:
   - Always available (in terms of projects)
   - If problem exists, always someone to trust

- Creates long term relationship
- Supplier meetings
- Future plans, big level discussions
- Team building

4. **Biggest barriers and problems in terms of supplier satisfaction?**
   - Tool changes
   - Too much paperwork (reports and specifications)
   - Lack of trust (not with 'the Company')
   - Communication
   - Not all projects have come to the end
   - Roadmap
   - Betray promise
   - Changes in original plans
   - Unclear state of supplier
   - What comes next
   - Lack of long term planning
5. **Do you have any activities towards supplier satisfaction for your own suppliers or/and you as a supplier to a customer?**
   - Not certain program for that
   - Certain acceptance level for their suppliers
6. **What are the benefits of satisfied supplier for a customer?**
   - Willing to put more effort
   - Priority
   - Earlier and better service ('the Company' comes first)
   - You get more performance
   - Proactive to the customer
   - No barriers in mind
   - Easier communication

2nd PART

7. **How the following elements affect to supplier satisfaction from the supplier point of view?**

Distance:
- Does not affect much
- No difference in co-operation between 'the Company' (European) sites

Ownership:
- Private company – limiting
- One big owner, strict management and policy
- Public company – different possibility
- Possibility to get involved
- Stock option program (Company A)
- Interest in profit
- Highly motivated people
- Better
- As a public company (Company A)
- If they have strong customer (like 'the Company') and they make profit
- People are highly motivated, they see their outcome
- Personnel is involved in all details (does not normally happen in private companies)

⇨ 'the Company' gets good service

Profits, payments:
- Profits are acceptable
- Supplier needs profits
- High risk in a form of investments
- High growth rate, need profits
- Very important

Merchandise:
- Nice to work with challenging and fascinating products
- Mobile phones are an interesting field

Product lifecycle:
- Critical
- Short lifecycle -> no stability -> high risk (high investments)
- Negative impact
- Difficult to control
- Strong ramp-up (figures are growing)
- Tools, set-ups

Market situation, Economic trends:
- Important

Supplier-Customer relation:
- Important

⇨'the Company' internal movements:

Culture:
- Can be difficult
- Different behavior (especially among Asian countries)
- Communication
- Europeans are pretty the same
- Way of working
- Social life and values

Network vs. separate company:

ESI (Early Supplier Involvement)
- Very important
- Helps to build up relationship

Selection of the previous elements

The most important ones:
1. ESI
2. Supplier-Customer relation
3. Market situation
4. Profits and payments

The least important ones:
1. Ownership
2. Distance
3. Separate company vs. network

4. **Miscellaneous issues in the discussion**
   - Different customers and new subcontractors cause problems (e.g. need to build further assembly factories)
   - Distinct opinions and interpretations
   - Communication
   - Implementation of new values needed

   - Trust is very essential regarding supplier satisfaction
   - If Company A would not trust certain persons in 'the Company', they had not made any needed investments

   - 'the Company's' life style is different
   - Personnel is very young, open mind, straightforward
   - Not conventional like others

   - Speed of market cause high requirements
   - More, better quality, faster
   - Requires a lot from people
   - Motivation needed, since Company A can not increase salaries

   - 'the Company's' role important in motivating supplier's people
   - Part in teambuilding and motivation programs
   - By doing this, 'the Company' gets better service and results, faster etc.

INTERVIEW WITH COMPANY B

Interviewer: Jari Niskanen
Present: Edward Lai

1st PART

1. **How do you define supplier satisfaction generally?**
   - Consistent, long-term benefit of the business
   - Business in the long run
   - Profitability, (return of the investment)
   - Investors obtain return on the money they have invested
   - Stability of business in long term
   - Win-win situation (for customer and supplier)
2. **What elements does supplier satisfaction include?**
   - Return (economical profitability)
   - Reputation
   - Good reputation -> good customer
   - Support from the customer
   - Introduction of new technology
   - Logistics, material
   - Advancement of the technological level
   - Company B is pushed by 'the Company' to develop technologies

3. **Examples of good and bad experiences in terms of supplier satisfaction?**
   Bad experiences: (with 'the Company')
   - Payments are not accurate
   - Short term co-operation, lack of planning
   - Orders come too late and then Company B have to rush
   - Better planning would be needed
   - It would improve capacity delivery and
   - Speeding up the delivery
   - Communication concerning engineering information
   - Not efficient enough
   - Delays
   - Sometimes they have to wait for files from Europe

   Good experiences: (with 'the Company')
   - Support from the customer
   - 'the Company' has a good reputation
   - Long term return
   - Customer which has future
   - 'the Company' invests in new technologies and materials
   - 'the Company' invests a lot in tooling
   - Pays good price for it
4. **Biggest barriers and problems in terms of supplier satisfaction?**
   - Training of the local 'the Company' Hong Kong stuff
   - They do not understand the corporate culture of 'the Company'
   - Many of them are young and inexperienced
   - They do not convey the business how it is wanted to be by the Finnish headquarters
5. **Do you have any activities towards supplier satisfaction for your own suppliers or/and you as a supplier to a customer?**
   - Company B has supplier survey
   - They ask if Company B 's requirements are acceptable
   - Pricing issues
   - Delivery issues
   - Supplier survey is also one content of the ISO 9000 standard, that Company B is carrying out
6. **What are the benefits of a satisfied supplier for a customer?**
   - Supplier will be very loyal to customer
   - Priority
   - Capacity
   - Flexibility
   - Share ideas and technologies with customer

2nd PART

7. **How the following elements affect to supplier satisfaction from the supplier point of view?**
   Distance:
   - Some effect (negative)
   - Sometimes it is more convenient and easier to talk face-to-face
   - Since communication becomes easier all the time, distance is not so important any more

Ownership:
- Very minimum effect
- Regardless of the ownership, company has the same objective
- To make profit
- Not an important issue

Profits, payments:
- Very important
- Payments in time
- If company is capable to meet quality and other requirements, they are allowed to ask good profit for that

Merchandise:
- Not so important
- Basically no effect

Product lifecycle:
- One meter of the company how successful they are
- It is a challenge that gives possibility to get better profits
- New products enable good profits
- Not so important
- They have to meet requirements whether they wanted or not

Market situation, Economic trends:
- Growing business is a positive thing
- Company B understand the strong market situation of 'the Company' and thus they are very committed to it
- Up going trend
- They reserve capacity for customer (in this case for 'the Company')

Supplier-Customer relation:
- Very important
- Early information sharing

'the Company' internal movements and reflections:
- Not so important
- They do not want to see frequent movements but basically it is not a major issue

Culture:
- In the beginning (~5 years ago) it was a problem
- Problems in understanding each other
- Problems in understanding requirements
- Difference in basic conceptual thinking
- Not a problem any more
- 'the Company' culture is easy to handle
- Not very important

Network vs. separate company:
- Until now they can not see the advantage of being in a network
- Might cause cultural problems etc…
- In terms of size of the business, being part of the network would be more enjoying and better

ESI (Early Supplier Involvement)
- Very important
- Hear information earlier
- Know people better
- Involved early in projects

Stability:
- Medium importance
- If business is stable, it is good for the company
- Company B does not ask to guarantee certain continuity of the business from their customer
- Company B assumes that if they provide good products with the right timing, they survive in the market

Multilevel co-operation:
- It helps
- If people know each other, it improves communication channel
- Quite important

Communication:
- Very important
- Fluent information flow essential

Better timing:
- Very important
- Important to meet schedules

8. **Miscellaneous issues in the interview discussion**
   - Because 'the Company' is in a steering role on the business, Company B tries to go the same way as 'the Company'
   - Company B uses six sigma training and other types of training, ISO 9000 standard and various investments in technologies to better meet the customer requirements in the market

INTERVIEW WITH COMPANY C
Interviewer: Jari Niskanen
Present: Jouko Hakala, Seppo Jaakkola
Note! Interview done in Finnish. Also interview reporting.

1st PART

1. **How do you define supplier satisfaction generally?**
   - Turvattu olemassaolo, kasvumahdollisuus
   - Molemminpuolinen luottamus ja avoimuus
   - Kehittämisyhteistyötä
   - Yhteistyötä, ei pelkkää arvostelua ja vaatimuksia
   - Yhteinen ajatus/toiminta siitä, mitkä ovat parhaat tavat kehittää
   - Taloudellinen merkitys olennainen, molemminpuolinen kannattavuus
   - Tyytymättömyys vastakohdista
   - Kaverin pettäminen
   - Eroja asiakkaissa

2. **What elements does supplier satisfaction include?**
   - Avoimuus
   - Luottamus
   - Yhteinen kehittäminen
   - Perusteltu palaute
   - Taloudellisuus

3. **Examples of good and bad experiences in terms of supplier satisfaction?**

   Bad experiences:
   - Toimittajasuhteen voi menettää
   - Lupauksia ei pidetä, petetään
   - Arvostelu joskus epäoikeudenmukaista
   - Monia kommunikaatiokanavia
   - Pitäisi olla useita näkökulmia
   - Arvostelun tulisi perustua faktoihin lähtökohdat huomioiden
   - Virheet tulisi ensin kasitellä pienellä, oikeallä porukalla
   - Avointa keskustelua ajoissa ennen kuin huono maine leviää
   - Jotkut asiakkaan vaatimukset ovat muodostuneet järjestelmän ohjaamana rasitteeksi
   - Ei tilaa maalaisjärjen käytölle

   Good experiences:
   - Toimittaja tuntee olevansa mukana toiminnassa ja kehityksessä
   - Perusteltu palaute
   - Negatiiviset asiat saattavat muuttua positiivisiksi, jos ne tuodaan mahdollisimman ajoissa ja oikein esille
   - tuote X oli hyvin valmistettava tuote, hyviä kokemuksia myös toimintatavoissa
   - Seuraavaan tuotteeseen hyvät menetelmätavat olivat jo kuitenkin unohtuneet
   - Vakiintuneet kommunikaatiokanavat
   - Ei kriittinen asia, ei tarvitse olla samanlaista toisten yritysten kanssa
   - Erilaisuus pitää osata hallita, valitaan oikeat ihmiset oikeisiin tehtäviin ja kohteisiin

   Other:
   - Tuotteen alas- ja uuden tuotteen ylösajot kriittisiä vaiheita
   - Tuoteohjelmakohtainen keskustelu voisi olla tarpeen kaikkien niiden osapuolten kanssa, jotka ovat osallisia ohjelmassa
   - Mahdollisuus tehdä parannuksia
   - Mahdollisuus saada tehdä kysymyksiä ja saada niihin perustellut vastaukset
   - Nähtäisiin ja mitattaisiin, mitä on opittu ydinkohtien osalta, esim. aikataulut yms…
   - Nähtäisiin onko parannusta tapahtunut
   - Toimistokohtaisia (’the Company’ sites) eroja toimintatavoissa
   - Porukka, joka tuntee toisensa (Company C – ’the Company’), niillä on hyvät edellytykset menestyä

4. **Biggest barriers and problems in terms of supplier satisfaction?**
   - Luottamuksen puute
   - Uusi yhteistyötapa (esim. ihmiset, joiden kanssa ei ole aiempaa yhteistyökokemusta) erilaisin toimintatavoin voi luoda alussa ongelmia
   - Enemmän uskallusta kyseenalaistaa
   - ESI arvokasta, aikaisemmin mukaan
   - Tuoteohjelmissa olisi hyvä olla yksi seniori, joka on jo tehnyt yhteistyötä toimittajan kanssa

- Jos yhteistyö tottunutta, vähemmän vaikeuksia
- Ei väärin ymmäryksiä

5. **Do you have any activities towards supplier satisfaction for your own suppliers or/and you as a supplier to a customer?**
   - Asiakastyytyväisyyttä mitattu: 10 kotimaisen toimittajan kanssa yhteistoiminnan kehittämisprojekti
   - Vaikeampaa globaalisti
   - Muutaman avaintoimittajan kanssa kehityskeskusteluja
   - Toimittajan arviointi jatkuvaa
   - Jatkuvasti esillä
   - Palaute jatkuvaa molemminsuuntaisesti
   - Palautejärjestelmä ’the Company’ osalta tärkeää
   - Tieto siitä, mikä menee huonosti, mikä hyvin
   - Miten (Company C) sijoittuu muihin toimittajiin nähden
6. **What are the benefits of a satisfied supplier for a customer?**
   - Aktivoi sekä motivoi kehitystoimintaan
   - Myös negatiivisen palautteen pitää johtaa kehitystoimenpiteisiin
   - Antaa parhaan mahdollisen panoksen
   - Liiketoiminnassa on aina ylä- ja alamäkeä, mutta pitkäaikainen tyytymättömyys/tyytyväisyys vaikuttaa prioriteetteihin
   - Riitely maksaa, toimintatapa muuttuu, likaisentyönlisä

2nd PART

7. **How the following elements affect supplier satisfaction from the supplier point of view?**

   Distance:
   - Ei periaatteessa merkitystä
   - Uuden aloituksen kanssa vähäinen merkitys
   - Vaikuttaa logistiikkaan
   - Aikavyöhykkeet tuottavat lisävaivaa

   Ownership:
   - Työntekijät eivät huomaa, omistaja voisi nähdä jotakin
   - Julkinen noteeraus on nostanut tunnettavuutta
   - "Suut suppuun" -> sijoittajat pitää pitää tyytyväisenä

   Profits, payments:
   - Suuri vaikutus
   - Jos yhteistyöstä ei tule tulosta, eikä tulosta ole näköpiirissä, vie se asiakastyytyväisyyden
   - Usko tuloksettomuudesta vie pohjan pois liiketoiminnasta
   - Maksutäsmällisyys hyvin tärkeä
   - Automaation välityksen vaikutus (ilmaista työtä)
   - Tällä hetkellä kaikista arvoa lisäävistä toiminnoista ei ole korvausta

   Merchandise:
   - Ei varsinaista merkitystä
   - Tuotteen selväpiirteisyys antaa paremmat edellytykset liiketoimintaan
   - Fyysisten tuotteiden osalta ei ongelmaa
   - Softa voi olla epämääräisempää

Product lifecycle:
- Elinkaaresta ei varsinaista varmaa tietoa
- Tieto elinkaaresta korostuu
- Tasapuolinen tiedonjako toimittajien suhteen
- Jos elinkaaret lyhenevät suunnitellusti, on yhteistoimintaa kehittettävä yhdessä
- Tuotteen vaihtohetket ovat kriittisiä, jos kulloinkin on vain yksi suurempi projekti
- Olisi parempi, jos voisi olla mukana jaetusti useammassa suuressa projektissa

Market situation, Economic trends:
- Optimaalinen tilanne olisi: hyvä markkinatilanne alenevassa talouden trendissä
- Luonnollisesti nousevassa busineksessa on helpompi olla tyytyväinen

Supplier-Customer relation:
- Suuri merkitys
- Tämän tyyppinen toiminta pitää olla partnership – muotoista
- Partnershipissä edut tulee olla molemminpuoliset
- Jatkuva ristiriidassa eläminen estää kehittymisen

‘the Company’ internal movements:
- Riippuu tapauksesta, voi olla suuri merkitys
- Voi olla esim. "elämän ja kuoleman" kysymyksiä

Culture:
- Kulttuuri vaikuttaa ja sillä on vahva merkitys
- Tavat pitää tuntea
- Yrityskulttuurilla on merkitystä joko helpottaa tai vaikeuttaa
- ’the Company’ yrityskulttuuri helppo ymmärtää ja tuntea
- Arvot, toimintatavat jne…
- Ei ole ollut ongelmia
- Company C myös ottanut mallia ’the Companyn’ yrityskulttuurista
- Arvot pitää olla kohdallaan
- Yhdenmukainen yrityskulttuuri helpottaa toimintaa

Network vs. separate company:
- Omistukselliset asiat merkittäviä
- Onnistuessaan/lisätessään yksittäisten yritysten liiketoimintaa sekä positiivisia että negatiivisia vaikutuksia

ESI (Early Supplier Involvement)
- Toimiessaan osoitus keskinäisestä luottamuksesta
- Suuri merkitys
- Varmuus tulevaisuudesta, aikaa ennakoida
- Kehittämistä ESI:ssä kuitenkin on

Stability:
- Stabiilisuus, tasainen kasvu parasta yritykselle
- Helpottaa päätöksentekoa ja ennustettavuutta
- Tehdään turhaa vähemmän
- Suuri merkitys

Multilevel co-operation:
– Tuntuu hyvältä
– Harkiten hyötyjen mukaisesti
– Ei saisi esim. lisätä merkityksettömien kokousten määrää ympäri maailmaa

Communication:
– Vakiintunut kommunikointitapa
– Tiedotus muutoksista mahdollisimman aikaisin
– Yhteinen projektin hallinta
– Synkronoitu
– Yhteiset työkalut
– Ongelmien/ hyvien käytäntöjen jakaminen
– Vakiintuneet kommunikaatiokanavat

Brief summary

The most important issues are:
1. Luottamus
2. Yhteinen project management
3. Partnership

–Yhteistoiminta mukaanluettuna (ESI) ja hyötyjen molemminpuolinen jakaminen

4. Kannattavuus ja taloudellinen stabiilisuus

INTERVIEW WITH COMPANY D

Interviewer: Jukka Mehtonen
Present: Gunnar Nordsten and Mikko Poisselkä

1st PART

1. **How do you define supplier satisfaction generally, what elements does it include?**
   – Openness in all levels, (essential in business relationship)
   – Open atmosphere (play with open cards)
   – Confidentiality
   – Total trust between two companies
   – Pricing, product specifications, volumes etc…
2. **Examples of good and bad experiences in terms of supplier satisfaction?**

   Bad experiences:
   – Some occasional cases in person to person relationships
   – Generally, no bad experience with ‘the Company’ or other companies

   Good experiences:
   – No filtering in information with ‘the Company’
   – Direct communication

3. **Biggest barriers and problems in terms of supplier satisfaction?**
   - Communication in global environment
   - Not common agenda or understanding between two companies
   - Cultural differences between the nations (America, China, Japan…)
   - Distinct way of thinking
   - Not so big problem with the Europeans
4. **Do you have any activities towards supplier satisfaction for your own suppliers or/and you as a supplier to a customer?**
   - Interviews and surveys for their own customers
   - For instance: ongoing Global Account –survey
   - In practice this means interviews with the major 5-6 customers
   - Also interviews with other industries
   - Some factories have a vendor's day
5. **What are the benefits of a satisfied supplier for a customer?**
   - Seamless, fluent logistics supply chain (from raw materials to customers)
   - Connection to the point of production

2nd PART

6. **How the following elements affect supplier satisfaction from the supplier point of view?**

   Culture:
   - No clear cultural differences/changes inside the 'the Company'
   - 'the Company' has successfully trained its employees to comply with 'the Company' culture

   Distance:
   - Physical distance has no such an important meaning as it had a few years ago
   - On the regional level distance has an implication but not locally (for example: plant locations)

   Ownership:
   - Important that customer has a stable ownership
   - Long term trust

   ESI (Early Supplier Involvement)
   - Very important and essential implication
   - Basically ESI between Company D and 'the Company' works
   - Disadvantages: design has been frozen too early
   - Company D would prefer to have 2-3 meetings before the design freezing
   - 1-2 steps earlier start in ESI, start from the entire concept of the product, not only from connectors
   - In an ideal case, Company D would like to get involved before the actual design has been done
   - Possibility to give proposals to design, this might accomplish some savings
   - In some cases they are prevented to use their best know-how (refers to connectors)
   - Involvement also in long term management level planning
7. **Miscellaneous issues in the interview discussion**
   - Advantage for Company D that 'the Company' is quick decision maker
   - No big committees involved

- ‘the Company’ is participating to tooling costs
- Shows high level of commitment
- Shared risk
- Support by ‘the Company’ to Company D in business functions
- ‘the Company's’ internal structure is not so obvious for every employee in Company D
- Roles, responsibilities and ways of operating are not always clear
- Important to Company D to work with the leader of industry
- Important to produce products at a competitive price
- Important to have an open dialogue about cost savings
- Close relationship makes it easier to understand the ‘the Company’ culture, operations and requirements
- An ideal customer for Company D uses the same software as they use

- Strategic side of the supplier satisfaction (viewpoint by Company D)
- Important to understand customer's roadmap
- Technologies involved in the future
- Early supplier involvement
- Access to all organizational levels in ‘the Company’

Brief summary

The most important issues are:
1. Communication
2. Early Supplier involvement
3. Openness
4. Trust

INTERVIEW WITH COMPANY E

Interviewer: Jari Niskanen
Present: Dan Canwall, Volt Pargalou

1st PART

1. **How do you define supplier satisfaction generally?**
   - True partnership
   - Not lowest price supplier
   - Both direction support
   - Bringing things to table to support ‘the Company’
2. **What elements does supplier satisfaction include?**
   - Trust in business relationship
   - Purchasing orders on time
   - Timing (CAD files)
   - Lead time requirements
   - Information LRP, DSP
   - Openness
   - Future issues, programs, LRP's
   - Openness between other suppliers
   - Price competitiveness

3. **Examples of good and bad experiences in terms of supplier satisfaction?**

   Bad experiences: (with ‘the Company’)
   - Trust on customers/new factories without support
   - Moving tools to other suppliers
   - Capacity planning
   - Understanding of partnership in ‘the Company’
   - Needs training
   - Understanding company culture
   - Differences in different ‘the Company’ sites

   Good experiences: (with ‘the Company’)
   - Business opportunity
   - Supplier partnership
   - Pay on time
   - Employees like and show support towards ‘the Company’

4. **Biggest barriers and problems in terms of supplier satisfaction?**
   - If prices are too pressured
   - If no profit -> big barrier
   - Critical that they (Company E) have cash and resources available
   - To support ‘the Company’ in the long term (investment plans)

5. **Do you have any activities towards supplier satisfaction for your own suppliers or/and you as a supplier to a customer?**
   - They have not done much yet
   - They believe they are fair and honest for customers
   - Open information sharing (pricing, capacity, logistics…)
   - Basis on good relationship with customer
   - Right now no acting program for that

6. **What are the benefits of a satisfied supplier for a customer?**
   - Better co-operation
   - Flexibility
   - Taking care of needs
   - Openness
   - Trust
   - Helps in problematic situations
   - For instance: delays in purchasing order
   - Better quality through the process
   - If you they (Company E) are happy with the supplier, they make financial and human resource investments for the supplier
   - Priority
   - Deal with the people who you get along well

2nd PART

7. **How the following elements affect supplier satisfaction from the supplier point of view?**

   Distance:
   - It helps to be as close as possible

- Even if Company E's stuff travel (for example) to Oulu, there is still some "distance" involved
- Easier to co-operate on a lower level of organization, when the distance is minimum
- Easier to talk and accomplish things

Ownership:
- Easier to work with a public company
- More open mind
- Professional management
- Long term focus
- Private company might be too personal
- Personalities of the owners might have some influence on supplier satisfaction

Profits, payments:
- Very important
- Affects on long term relationship
- As a public company, you have to satisfy stakeholders

Merchandise:
- No meaning
- Company E see themselves as service company, although they supply physical goods

Product lifecycle:
- Obviously, the longer the product is in production, the better
- To know what is coming next, is the vital issue
- Know how to utilize equipment etc…
- Important to see when product life cycle is closing to the end, that there is coming something behind for the supplier
- Otherwise, satisfaction decreases
- People are excited when something new is coming
- New program -> new technology

Market situation, Economic trends:
- Competitive customers have priority
- Customers which have long term future continuity
- If ‘the Company’ makes bad decisions that affect on market situation, it may influence on supplier satisfaction

Supplier-Customer relation:
- The higher you are in the relationship, the more satisfied you are
- It develops trust
- They know they have to do things as a supplier to enhance their role with ‘the Company’
- They put a lot of time to get to know each other
- Strong impact

‘the Company’ internal movements and reflections:
- If movements hurt the relationship, they are not satisfied
- Basically, change is a good thing (as long as it is for better)
- Can not make improvements without changes
- Changes need to be communicated clearly
- To understand the purpose of the change

– Not a major issue

Culture:
– Important to have a common way of doing business
– Very important

Network vs. separate company:
– Company E see ‘the Company’ as a network since it is a global company
– Network is a good way to operate
– Possibility to help each other
– No need to add resources
– You can share issues and problem solving
– Network helps to achieve satisfaction

ESI (Early Supplier Involvement):
– Extremely critical regarding supplier satisfaction
– Creates trust

Stability:
– Important
– Long term business objective
– Possibility to grow
– Makes supplier happy

Multilevel co-operation:
– Important
– Related to supplier-customer relationship
– Personal relationships important in all levels

Communication:
– Important

Better timing:
– Important, but less important than ESI

8. Miscellaneous issues in the interview discussion
– Program delays have a major impact on supplier satisfaction
– Delays cause harm -> dissatisfaction
– All level communication important
– Personal relationships

Brief summary

The most important issues are:
1. Profitability
2. Long term continuity (business stability)
3. ESI
4. Relationship
- Trust on partner
5. Culture