

Offering selection factors in the Taiwanese high-tech industry

-an application of a B2B marketing research method for
knowledge-intensive offerings

Carl-Fredrik Mårtensson
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Abstract

- Title:** Offering selection factors in the Taiwanese high-tech industry
-an application of a B2B marketing research method for knowledge-intensive offerings
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- Problem:** Sweden is a highly industrialized country with great dependence on export¹. A high-wage country like Sweden has to focus on knowledge-intensive production as supposed to labour-intensive production in order to achieve export successes. The difficult issue when realizing that Swedish companies have to focus on knowledge is to come to a conclusion on what type of knowledge to develop and utilize to be more competitive.
- Taiwan is one of the most dynamic markets in the world and it offers Swedish companies with an advanced position in e.g. IT/telecom, medical technology and biotech great export possibilities². Between 1994 and 2003, Taiwan's total import increased by 51 %³. Over the same time period, Swedish export to Taiwan only increased by 15.7 %⁴. If an important reason for this development is that Swedish companies have lost orders to competing firms, then it is not positive and a question about why arises. However, other reasons could explain the trend and they need to be explored.
- It is of little use for Swedish companies to focus on knowledge-intensive production unless it produces an output that customers demand. In order to promote Swedish export to Taiwan the factors that Taiwanese companies consider the

¹ http://www.swedenabroad.com/pages/general____8848.asp, (2005-04-12)

² <http://www.swedishtrade.se>, (2005-04-12)

³ Based on data provided by Han-Chuan Cheng at Taiwan Economic Data Center, (2005-02-01), Calculated in US\$

⁴ Based on data from <http://www.scb.se>, (2005-03-27), Calculated in US\$

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most in the offering selection process need to be mapped out. The high-tech industry in Taiwan is especially interesting, because it is an important source of sales opportunity for Swedish companies with knowledge-intensive offerings. A marketing research method for surveying offering selection factors is needed for this research and it should also be a powerful tool to be used in other countries and contexts.

Purpose:

The first purpose is to give explanations to why Swedish export to Taiwan has not followed the upward trend of Taiwanese import.

The second purpose is to suggest offering selection factors in the Taiwanese high-tech industry for Swedish companies with knowledge-intensive offerings to focus on to win orders.

The third purpose is to present a business-to-business marketing research method for surveying offering selection factors that works for knowledge-intensive offerings and in international environments.

Methodology:

Statistical data has been acquired from a variety of sources in Taiwan and Sweden. A number of in-depth interviews have been conducted with customers of Swedish companies in the Taiwanese high-tech industry. The marketing research method was developed by using existing models and conceptions as a foundation.

Conclusions:

The Taiwanese import of many of the most important products for Swedish export to Taiwan in 1994 did not increase as much as the overall trend. In fact many decreased; most notable is the category road vehicles, which alone can explain why Swedish export to Taiwan has not followed the upward trend of Taiwanese import.

Applying the developed marketing research method in the Taiwanese high-tech industry produced results that should be helpful for Swedish companies trying to win orders in this industry. Factors concerning the product, the service related to the product, logistics and costs, as well as supplier characteristic factors are considered when selecting between offerings from different suppliers. The most considered factors all categories are: Price, On time delivery, Product reliability, Support, Expected physical life length, Right quantity delivery, Product safety, Expected technical life length, Percentage of rejection, Trustworthiness, Product performance and Technical capability for innovation.

Considering what is available in the market today, the factors that need the most improvement are: Ability to be flexible, Product performance, Support, Maintenance of product, Product reliability, Secured supply chain, Commitment to improvement, Delivery reliability, Delivery speed, Logistical information sharing and Local presence.

After using the developed marketing research method in Taiwan some revisions were made to perfect the method. The offering selection factors defined in the model seemed to be comprehensive but some changes were made because of knowledge gained from performing the interview. A complete marketing research method is presented in the end of the report.

Key words:

Offering selection, Taiwan, Knowledge-intensive, High-tech, Business-to-Business, Marketing research, Export

Dear readers,

This master thesis is written within the field of Technology Management and it is the finishing part of our degrees in Business & Economics and Electrical Engineering respectively.

The trend of Swedish export to Taiwan related to Taiwanese import constituted the foundation for this thesis and the reason why Taiwan was especially interesting as a research object. Henrik Byström, representative of the Swedish Trade Council in Taiwan, formulated this issue at an initial stage. Because of our will to promote Swedish export to Taiwan in the future, we decided to take the research further. In doing so, we have experienced an exiting, most instructive and pleasant journey both in the literature and geographically.

This master thesis would not have been possible without help from a number of people. We would like to thank; Henrik Byström and the Swedish Trade council in Taiwan for their help throughout the study, our tutors Stein Kleppestø and Stian Nygaard for highly valuable advise and guidance, and the Taiwanese companies for their participation and kind reception. Last, we would like to thank our families for being supportive. Thank you!

Enjoy your reading

Lund, May 30th 2005

Carl-Fredrik Mårtensson

Sonny Strömberg

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1 Introduction

1.1 Background

Sweden is a highly industrialized country with great dependence on export⁵. The manufacturing industry contributes heavily to Sweden's export and at the same time to Sweden's prosperity⁶. In a global economy with free trade, global firms have to be prepared for global competition. A high-wage country like Sweden has to focus on knowledge-intensive production in order to achieve export successes. Labour-intensive production can be done cheaper in low cost countries and Sweden will have a hard time competing for this kind of production.

Moreover, countries that earlier competed with cheap labour doing manual tasks in the production, are now focusing more on knowledge. Competence, education and research in these countries are already or will soon be just as advanced as in Sweden. This means that these countries will also be able to handle the complex production of the future.⁷

Knowledge is a fuzzy conception and just to advice managers of Swedish companies to focus on knowledge-intensive production and R&D does not give much guidance on how to become more competitive. The difficult issue when realizing that Swedish companies have to focus on knowledge is to come to a conclusion on what type of knowledge to develop and utilize to be more competitive.

Taiwan is one of the most dynamic markets in the world and it offers Swedish companies⁸ with an advanced position in e.g. IT/telecom, medical technology and biotech great export possibilities⁹. Taiwan has over the last 50 years risen to become an industrialized nation and in 2004, Taiwan's GDP¹⁰ per capita was 14,655 US\$¹¹, which is about 12 times as much as mainland China's¹². Taiwan's GDP per capita at purchasing power parity is 88 % of Sweden's GDP per capita and 4.5 times bigger than Mainland China's¹³. Over the last ten years, Taiwan has become a democracy and recently a member of the World Trade Organisation. Taiwan has a population of 22.7 million people¹⁴ and in 2001 1.1 million students were enrolled in higher

⁵ http://www.swedenabroad.com/pages/general____8848.asp, (2005-04-12)

⁶ <http://www.ivawebb.se/produktion/download/rapporter/Framtida%20Produktion.pdf>, (2005-04-20)

⁷ Ibid

⁸ The term "Swedish companies" is used to describe companies based in Sweden or companies with production in Sweden.

⁹ <http://www.swedishtrade.se>, (2005-04-12)

¹⁰ Gross Domestic Product

¹¹ <http://www.swedishtrade.se>, (2005-04-13)

¹² http://europa.eu.int/comm/external_relations/china/summit_1204/ip04_1440.htm, (2005-04-13)

¹³ <http://www.imf.org>, (2005-04-13)

¹⁴ <http://www.swedishtrade.se>, (2005-04-14), year 2004

education¹⁵. Between 1994 and 2003, Taiwan's total import increased by 51 %¹⁶. Over the same time period, Swedish export to Taiwan only increased by 15.7 %¹⁷. This development does not appear to be positive from a Swedish perspective and it opens up for questions about how Swedish companies can become more competitive in Taiwan.

1.2 Problem discussion

The fact that Swedish export to Taiwan has not followed the upward trend of Taiwanese import could have many explanations. If an important reason for this development is that Swedish companies have lost orders to competing firms, then it is not positive and a question about why arises. However, other reasons could explain the trend and they need to be explored.

In order for Swedish companies to be competitive and win orders in Taiwan in the future, the offered solution to the customers' problems has to be better than the competitors' offerings. It is of little use for Swedish companies to focus on knowledge-intensive production unless it produces an output that customers demand. A report from IVA¹⁸ (2005) suggest that Swedish production should focus on enhancing speed, flexibility, quality and reliability, without a discussion about if these factors are the most important to win orders¹⁹. In order to promote Swedish export to Taiwan those factors need to be mapped out i.e. factors that the Taiwanese companies consider the most in the offering selection process. By doing so, the conclusions can provide a foundation for providing competitive offerings and give indications of the type of knowledge that is needed to produce competitive offerings.

Knowledge-intensive offerings have to be in focus because of the underlying assumption that Swedish companies have to compete with superior knowledge. The high-tech industry in Taiwan is especially interesting, because it is an important source of sales opportunity for Swedish companies with knowledge-intensive offerings. A marketing research method for surveying offering selection factors is needed for this research and it should also be a powerful tool to be used in other countries and contexts.

¹⁵ <http://www.wes.org/ewenr/02nov/Practical.htm>, (2005-04-15)

¹⁶ Based on data provided by Han-Chuan Cheng at Taiwan Economic Data Center, (2005-02-01), Calculated in US\$

¹⁷ Based on data from <http://www.scb.se>, (2005-03-27), Calculated in US\$

¹⁸ Kungliga Ingenjörsvetenskapsakademien

¹⁹ <http://www.ivawebb.se/produktion/download/rapporter/Framtida%20Produktion.pdf>, (2005-04-20)

1.3 Purpose

The first purpose is to give explanations to why Swedish export to Taiwan has not followed the upward trend of Taiwanese import.

The second purpose is to suggest offering selection factors in the Taiwanese high-tech industry for Swedish companies with knowledge-intensive offerings to focus on to win orders.

The third purpose is to present a business-to-business marketing research method for surveying offering selection factors that works for knowledge-intensive offerings and in international environments.

1.4 Target audience

The target audience of this master thesis is:

- Current and potential Swedish suppliers of the Taiwanese high-tech industry.
- Companies needing a framework for surveying offering selection factors in a business-to-business environment.
- The Swedish Trade Council

1.5 Reading guide

The chapters of this master thesis build on each other and theory, empirics, analysis and to some extent methodology are interwoven. After the introduction, our general approach to methodology is discussed together with short theoretical explanations of key methodological terms. A more detailed methodological description and analysis is presented later in the thesis in close connection to the sections where each of the purposes is dealt with. The methodology, analysis and conclusion related to the first purpose are presented before moving on to the marketing research method, and further, the suggestions of offering selection factors to focus on.

1.6 Useful definitions

Offering: A supplier's offering is a package consisting of different proportions of the elements of physical product, service, advice, adaptation and logistics and the costs that it involves²⁰.

The offering selection model: A model, developed by the authors of this thesis, containing factors that influence which offering a customer chooses.

²⁰ Ford D et al (2002): *The Business Marketing Course-Managing in Complex Networks*, John Wiley & Sons Ltd, Guildford, p 121 – 122.

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Offering selection factors:	The factors influencing which offering a customer chooses.
Value providing factors:	Those offering selection factors that provide value to the customer.
Knowledge-intensive:	Products and services can be considered knowledge-intensive if they contain a large amount of problem solution, creativity and non-standardized solutions ²¹ .
High-tech company:	A company with more than 5 % expenditure on R&D relative the turnover is defined by OECD (1994) as a high tech company ²² .
High-tech products:	Products manufactured by a high-tech company.
Taiwan:	Republic of China with its capital in Taipei. Known in APEC as Chinese Taipei.
Mainland China:	Peoples Republic of China with its capital in Beijing.
Swedish companies:	The term is used in this thesis to describe companies based in Sweden or companies with production in Sweden.

²¹ Glesbygdsverket (1997): *Åtgärdsprogram för kunskapsintensiv produktion i gles- och landsbygd*, p 9.

²² <http://www.oecd.org>, (2005-05-02)

2 Methodology

In this chapter our general approach to methodology is discussed together with short theoretical explanations of key methodological terms. As the three related purposes of this research have required different methodological approaches a methodological description and analysis related to each purpose is presented in close connection to the sections where each purpose is dealt with.

2.1 General approach

2.1.1 The nature of the research

Gibbons et al (1994) suggest that the process of knowledge production in contemporary society falls into two contrasting categories or types, which they describe as 'mode 1' and 'mode 2' knowledge production²³. In mode 1, knowledge production is primarily driven by an academic agenda and the academic community is defined as the most important audience. In mode 2 the audience is broader and findings are closely related to context and may not easily be replicated. Some researchers have suggested that management and business research is more suited to mode 2.²⁴ Basic research is research that advances knowledge of the fundamentals of how the social world works and develops general theoretical explanations. Applied research is research that tries to solve specific problems or help practitioners accomplish tasks.²⁵

This thesis is not primarily driven by an academic agenda, even though an academic methodology has been adapted. It serves to produce context specific knowledge that may be difficult to generalize and replicate. However, the business-to-business marketing research methodology developed for this research should have a broader field of application than just this research. This research should be seen as applied research and to fall into the category of mode 2 knowledge production.

2.1.2 Epistemological position

An epistemological issue concerns the question of what is or should be regarded as acceptable knowledge in a discipline. Positivism is an epistemological position that advocates the application of the methods of the natural sciences to the study of social reality and beyond. Science must be conducted in a way that is value free and there is a clear distinction between scientific statements and normative statements. The true domain of a scientist when adapting a positivistic view is to make scientific not normative statements.²⁶

²³ Gibbons M et al (1994): *The new production of knowledge*, Sage, London.

²⁴ Bryman A et al (2003): *Business research methods*, Oxford University press, Gosport, ch 1.

²⁵ Lawrence W (2000): *Social Research Methods, Qualitative and Quantitative Approaches*, Pearson Education.

²⁶ Bryman A et al (2003): *Business research methods*, Oxford University press, Gosport, ch 1.

Interpretivism is a term given to a contrasting epistemology to positivism. Interpretivism is an epistemological position that claims people and institutions to be different from the objects studied in natural science. The study of the social world therefore requires a different logic of research procedure, one that reflects the distinctiveness of humans as against the natural order. Whereas positivism tries to explain human behavior, interpretivism emphasizes on understanding human behavior.²⁷

The authors of this thesis believe that a positivistic approach to social science research is unrealistic because social phenomenon are far too complex to be fully explained, they can at best be understood to some extent. An interpretivistic position has therefore been adapted to interpret and understand the empirical data. An interpretivistic position also opens up for normative statements according to Bryman (2003), which the authors of this thesis believe, is necessary for this thesis to serve its purpose²⁸.

2.1.3 Approach to the theory

The term ‘theory’ is used in a variety of different ways, but its most common meaning is as an explanation of observed regularities, to explain the relation between variables. This is called theories of the middle range, which is different from a grand theory or a theoretical perspective that operates on a more abstract and general level.²⁹

Furusten (1996) claims that the popular management discourse tends to be of ideological nature, it does not represent knowledge³⁰. What he means by this is that it is common that only the authors’ own experiences and references to studies supporting the authors’ theory serve to legitimate normative arguments³¹.

The theory used in this research has been taken from relevant management books and published articles. Considering the claims of Furusten, the literature has been treated as inspiration rather than theories holding an objective truth that cannot be neglected. Pieces of the literature have been used when a satisfying internal logic has been presented.

²⁷ Bryman A et al (2003): *Business research methods*, Oxford University press, Gosport, ch 1.

²⁸ Ibid

²⁹ Bryman A et al (2003): *Business research methods*, Oxford University press, Gosport, p 7.

³⁰ Furusten S (1996): *Den populära managementkulturen*, Nerenius & Santerus Förlag AB, Falun, p 221.

³¹ Furusten S (1996): *Den populära managementkulturen*, Nerenius & Santerus Förlag AB, Falun, p 159 – 162.

2.2 Methodology theory

2.2.1 Inductive and deductive approach

There are two ways to approach a research question. An inductive methodology could be viewed as the way of discovery. With an inductive approach to inquiry or social theory, one begins with concrete empirical details and then works toward abstract ideas or general principles. With a deductive approach to inquiry or social theory, one begins with abstract ideas and principles and then works toward concrete, empirical details to test the idea.³²

2.2.2 Data collection methods

Qualitative data comes in the form of words, pictures, sounds, visual images, or objects. Quantitative comes in the form of numbers.³³ Any investigation consists of data collection and there exists various collection methods and data sources. *Secondary data* is data that has already been collected for some purpose other than the one under consideration. *Primary data* is data, which is collected specifically to answer the question(s) posed by the current research objectives. Primary data methods can be broken down as follows:

Survey research: Includes structured or semi-structured data collection methods, with the information being collected from a census of the population of interest or from a representative sample of that population. Survey research methods include personal-, mail-, telephone- or computer interviews.

Qualitative research: Takes the form of unstructured interviews and exercises, and is used to generate ideas and/or hypotheses and to investigate the respondent's beliefs, feelings and attitudes.

Experimental research: Involves the manipulation of an independent variable or variables to test and measure the effect on the dependent variable.

Observation: In some cases, it is preferable to observe respondents' behaviour rather than to interview them on that behaviour. It may be used to investigate people's current behaviour and the result of past behaviour.³⁴

³² Lawrence W (2000): *Social Research Methods, Qualitative and Quantitative Approaches*, Pearson Education.

³³ Ibid

³⁴ Webb J R (1992): *Understanding & Designing Marketing Research*, The Dryden press, Chatham, p 23 - 24.

2.2.3 Validity and reliability

Reliability refers to the consistency of a measure of a concept. High reliability is achieved if the research can be replicated with the same results. Validity has to do with whether a measure of a concept really measures that concept. Internal validity is a term pertaining to scientific research that signifies the extent to which the conditions within a research design were conducive to drawing the conclusions the researcher was interested in drawing³⁵. Examining the answers from groups that are known to differ can test the concurrent validity. Convergent validity is established by comparing the results from one methodology with the results from another different methodology measuring the same concept.³⁶

It should be pointed out that validity presumes reliable, because if a measure is not reliable it is not valid. However, the discussion of reliability and validity is potentially misleading because it would be wrong to think that all new measures are submitted to the rigours described above.³⁷

³⁵ http://en.wikipedia.org/wiki/Internal_validity, (2005-04-28)

³⁶ Bryman A et al (2003): *Business research methods*, Oxford University press, Gosport, p 75 - 79.

³⁷ Ibid

3 The stagnation of the Swedish export to Taiwan

This chapter aims to give explanations to why Swedish export to Taiwan has not followed the upward trend of Taiwanese import and to discuss the methodology used for the investigation.

3.1 Methodology

3.1.1 Practical approach

It was suspected that analyzing secondary quantitative data in the form of import and export statistics at product category level would provide a sufficient basis to give explanations to the trend. It was therefore needed to get hold of Taiwanese import statistics, which was comparable with Swedish export statistics. Sweden is using the SITC³⁸-system to classify export products into product categories while Taiwan is using a different system called the HS³⁹-system to classify imported products. These systems are not directly comparable, however, through Taiwan Economic Data Center, Taiwanese import statistics translated into the SITC-system was obtained. It is possible to translate the HS-system into the SITC-system but only to a certain level of detail. Swedish export statistics sorted in the SITC-system was acquired from Statistiska Central Byrån, SCB.

The years 1994 to 2003 was chosen as the period of study because of limited access to product category specific data from 2004. A similar overall trend is however also found when looking at the ten-year period between 1995 and 2004. Other data was obtained from the Taitra library in Taipei, Bureau of Foreign Trade and Republic of China National Statistics.

A deductive approach was adapted to approach the statistical data. It was suspected that major changes in the export and import of different products together with increases and decreases of trade between Taiwan and other countries had impacted the overall trend. The reason why the trend was dissected into product categories was because different products have different demand patterns and analysing the import and export at product category level should therefore provide explanation value.

3.1.2 Criticism of methodology

The authors of this thesis are aware of the fact that this methodology and the empirical data used do not go deep enough to investigate all the underlying factors. The purpose is to give explanations not to fully explain the phenomenon. Changes in the domestic consumption of products where competing Swedish products are present

³⁸ Standard International Trade Classification

³⁹ the Harmonized System

could also have been studied. An assumption was made that changes in the total import of a product affect the possibility of Swedish companies providing this product to achieve export successes. It is of course possible that import of a product goes down even if consumption goes up, if domestic suppliers are gaining market shares. However, statistics on domestic consumption categorized in the same product categories as the import and export statistics was not found.

The use of the statistics itself can lead to false conclusion about the performance of Swedish export. If a product for the most part is produced in Sweden but final assembly is performed in another country before the product is exported to Taiwan then it will not be registered in the Swedish export statistics to Taiwan. This situation still benefit Swedish export but if the use of another final assembly country has begun during the period of study, it will appear in the statistics as if Swedish export to Taiwan has lost ground to other countries. There could also be other factors distorting the export statistics from being a measurement of the sales performance of Swedish made products in Taiwan. These factors have not been further explored and there could therefore be a problem with validity in the sense that the statistics does not measure what it should measure, the performance of Swedish made products in Taiwan.

3.2 Analysis

3.2.1 Trend of total Taiwanese import

During the period 1994 to 2003, later called the period of study, Taiwan's real GDP increased by 46.6 %. During the first years of this period annual growth was over 6 % only to settle around 3 % in the beginning of the new millennium.⁴⁰ The three most significant increases by sector have been in "Trade and eating-drinking places", "Finance, insurance and real estate" and "Manufacturing". Although manufacturing has expanded very much over the period of study, its share of total GDP has decreased from 29.0 % in 1994 to 25.6 % in 2003. Nevertheless, manufacturing remains the largest sector of Taiwan's economy.⁴¹

The rapid economic development has resulted in an equally large increase of Taiwan's total import. During the period of study, Taiwan's total import has increased by 51 %⁴². Import from Mainland China has increased as much as 490 %, and that accounts for 21.7 % of the total increase of Taiwan's import. Import from Japan has increased by 32 % and import from South Korea increased by 188 %. Totally these three countries make up 54 % of Taiwan's total import increase during the period of study. USA remains Taiwan's second biggest import country after Japan

⁴⁰ http://eng.stat.gov.tw/public/data/dgbas03/bs4/nis_e/EP2.xls, (2005-03-24)

⁴¹ Based on data from Directorate General of Budget, Accounting and Statistics: (2004): *Statistical Yearbook of The Republic of China 2004*, Directorate General of Budget, Accounting and Statistics, Taipei.

⁴² Based on data provided by Han-Chuan Cheng at Taiwan Economic Data Center, (2005-02-01), Calculated in US\$

even though import from USA has decreased by 7 % during the period of study. Most western countries have decreased their share of Taiwan's total import since 1994.⁴³

3.2.2 Trend of Swedish total export to Taiwan

During the period of study, Swedish export to Taiwan has increased by 21.3 %, calculated in SEK. If the increase between 1994 and 1995 is deducted from the figures, Swedish export to Taiwan has almost not increased at all. Swedish export to Taiwan increased and peaked in 2000, after that the export has gone back to almost the same level as it was in middle of the 1990's.⁴⁴

A great deal of the increase of Swedish export to Taiwan up until 2000 can be related to the trend in export of telecommunications equipment to Taiwan. The total increase of Swedish export to Taiwan between 1994 and 2000 was about 2.5 billion SEK. The increase of telecommunications equipment export from Sweden to Taiwan was over the same time period about 2 billion SEK. The decline back to the figure similar to the ones in the middle of the 1990's after the year 2000 can also be related to the decline in export of telecommunications equipment. The total decrease of Swedish export to Taiwan between 2000 and 2003 was about 1.4 billion SEK. The telecommunication equipment impacted this decline very much with a decrease of 1.7 billion SEK from 2000 to 2003.⁴⁵

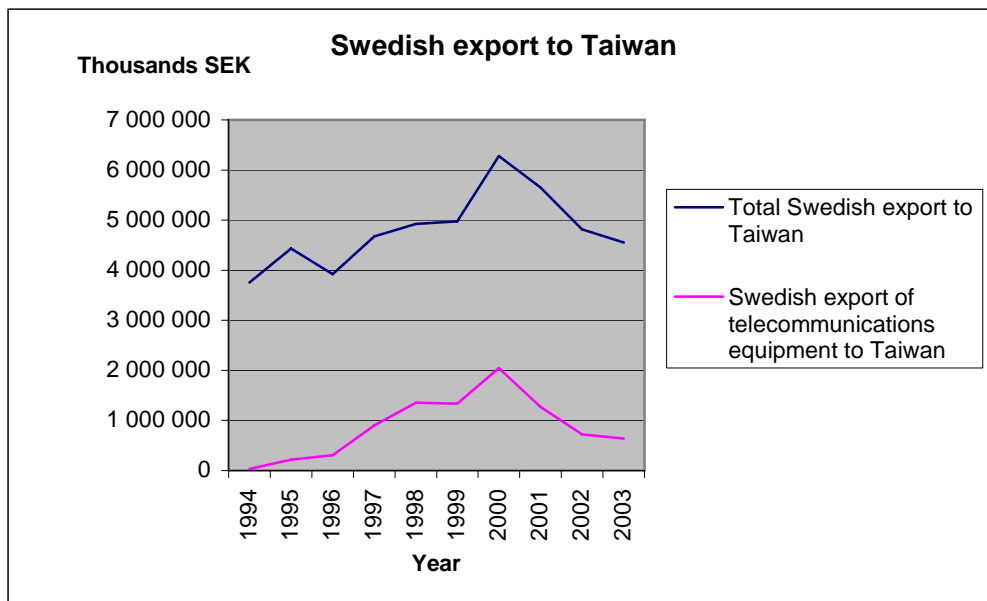


Figure 1: Swedish export to Taiwan 1994 – 2003. Based on data from <http://www.scb.se>, (2005-03-28)

⁴³ Based on data from Directorate General of Budget, Accounting and Statistics: (2004): *Statistical Yearbook of The Republic of China 2004*, Directorate General of Budget, Accounting and Statistics, Taipei.

⁴⁴ Based on data from <http://www.scb.se>, (2005-03-27)

⁴⁵ Ibid

Taiwanese overall import of telecommunications equipment⁴⁶ shows a similar pattern with a peak in 2000 followed by a decline. The changes in Swedish export of telecommunications equipment to Taiwan are however more dramatic than the changes in total Taiwanese import of telecommunications equipment when analyzing the relative change. Swedish export of telecommunications equipment increased by about 6000 % between 1994 and 2000. Taiwanese total import of telecommunications equipment increased by 175 % over the same period of time. However, 1994 was a very low year for Swedish export of telecommunications equipment to Taiwan compared to the preceding years. Although, even if an average of the years 1990 to 1994 is used compared to the year 2000, the increase is still by about 1200 %. The decline in Taiwan's import of telecommunications equipment between 2000 and 2003 was 24 %, but Swedish export of telecommunications equipment to Taiwan decreased as much as 69 %.^{47, 48}

3.2.3 Important product categories in Swedish export to Taiwan

The overall trend of Swedish export to Taiwan increasing by 15.7 % while Taiwanese total import increased by as much as 51% can be broken down into product categories to provide insight about what has happened. When examining the top ten product categories in Swedish export to Taiwan in 2003 a similar trend as the total trend is found. The top ten categories in 2003 have increased by 23 % since 1994, while Taiwanese import of these products has increased by 60 %. The top ten categories in 1994 and 2003 accounted for 85 % of Sweden's total export to Taiwan in each of these years. The top ten product categories have largely remained the same since 1994. Worth noticing is the internal order of the product categories and that there are two new categories.^{49,50}

⁴⁶ Category 76 in the SITCrev3 classification was been used because the subcategory telecommunications equipment 764 does not exist in the Taiwanese records. Except telecommunications equipment (764), the category 76 also includes sound and recording appliances.

⁴⁷ Based on data provided by Han-Chuan Cheng at Taiwan Economic Data Center, (2005-02-01)

⁴⁸ Based on data from <http://www.scb.se>, (2005-03-27)

⁴⁹ Based on data provided by Han-Chuan Cheng at Taiwan Economic Data Center, (2005-02-01)

⁵⁰ Based on data from <http://www.scb.se>, (2005-03-27)

Top ten categories in Swedish export to Taiwan

(Grey colour indicates that the product category does not exist in the other table)

1994

Product category (from SITC)	(thousands SEK)
78 ROAD VEHICLES (INCL.AIR CUSHION VEHICL.)	1 215 889
64 PAPER AND PAPERBOARD; ARTICLES THEREOF	525 454
67 IRON AND STEEL	373 293
74 GENERAL INDUST.MACHINERY AND EQUIP,N.E.S ⁵¹	306 617
79 OTHER TRANSPORT EQUIPMENT	204 398
77 ELECTR.MACHINES,APPARATUS AND APPLIANCES	196 305
72 MACHINERY FOR PARTICULAR INDUSTRIES	142 047
87 PROFESSIONAL,SCIENTIFIC,CONTROL.INSTRUM.	103 091
54 MEDICINAL AND PHARMACEUTICAL PRODUCTS	61 768
51 ORGANIC CHEMICALS	60 108

2003

Product category (from SITC)	
77 ELECTR.MACHINES,APPARATUS AND APPLIANCES	888 487
76 TELECOM; SOUND RECORDING AND REPROD.APP.	647 055
78 ROAD VEHICLES (INCL.AIR CUSHION VEHICL.)	540 399
67 IRON AND STEEL	452 378
64 PAPER AND PAPERBOARD; ARTICLES THEREOF	432 770
54 MEDICINAL AND PHARMACEUTICAL PRODUCTS	226 106
74 GENERAL INDUST.MACHINERY AND EQUIP,N.E.S	214 453
25 PULP AND WASTE PAPER	174 126
87 PROFESSIONAL,SCIENTIFIC,CONTROL.INSTRUM.	167 113
72 MACHINERY FOR PARTICULAR INDUSTRIES	160 544

Table 1: Top ten categories in Swedish export to Taiwan. Based on data from <http://www.scb.se>, (2005-03-28)

⁵¹ N.E.S = Not Elsewhere Specified

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In the following product categories, among the largest Swedish export categories to Taiwan in 1994, has the import to Taiwan increased less than the overall trend of 51 %.

Development of Taiwanese import 1994 - 2003

78 ROAD VEHICLES (INCL.AIR CUSHION VEHICL.)	-41 %
79 OTHER TRANSPORT EQUIPMENT	-22 %
67 IRON AND STEEL	-2 %
64 PAPER AND PAPERBOARD; ARTICLES THEREOF	-1 %
74 GENERAL INDUST.MACHINERY AND EQUIP,N.E.S	+17 %
51 ORGANIC CHEMICALS	+23 %

Table 2: Development of Taiwanese import 1994 - 2003. Based on data provided by Han-Chuan Cheng at Taiwan Economic Data Center, (2005-02-01)

These categories made up 72 % of Sweden's total export to Taiwan in 1994 and the development of the import in these categories has therefore been crucial. The numbers are showing that Sweden has faced a negative development of import in the transport sector and a stagnation of steel and paper import. Thus, one explanation to why Sweden has not been able to keep up with the Taiwanese import increase is that the import in many of the most important export categories in 1994 has not increased as much as the overall trend.

The category 78, road vehicles, has been a dominant part of this development. This category represented 32 % of Sweden's total export to Taiwan in 1994 and Taiwan's import fell by 41 % in this category between 1994 and 2003. Swedish export to Taiwan in this category fell as much as 56 % during the period of study and in 2003 it only represented 12 % of Sweden's total export to Taiwan. When relating this to the trend of Swedish export to all countries in this category, a similar downward trend is not found. Swedish export in this category to all countries increased by 106 % during the period of study.

If road vehicles are excluded from the total Swedish export to Taiwan figures, then Swedish export to Taiwan has actually increased by 51 % during the period of study. If the same thing is done with the total Taiwanese import figures, then the increase only changes from 51 % to 56 %. This is because road vehicles are a much smaller part of Taiwanese total import than it is for Swedish export to Taiwan. This means that if road vehicles are excluded from the figures, Swedish export to Taiwan has more or less followed the upward trend of Taiwanese import during the period of study.^{52, 53}

⁵² Based on data provided by Han-Chuan Cheng at Taiwan Economic Data Center, (2005-02-01)

⁵³ Based on data from <http://www.scb.se>, (2005-03-27)

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The downward trend of Taiwanese road vehicle import during the period of study has not made an impact on all countries exporting these products. Import of road vehicles⁵⁴ from South Korea and Japan to Taiwan increased from about 14 to 320 million US\$ from 1994 to 2003. At the same time, import of road vehicles from Europe and United States dropped from about 2400 to 648 million US\$.⁵⁵ This is not due to rising Taiwanese protection of the car industry but rather to increasing comparative advantage of Japanese and South Korean vehicle producers⁵⁶. Swedish road vehicle export to Taiwan actually only dropped between 1994 and 1999, after that Swedish export of road vehicles to Taiwan has increased slightly. Schilling wrote in 1998 that European luxury cars sales in Asia had been affected negatively by the Asian crisis in end of the 1990's⁵⁷. Some people argue that Taiwan was relatively unaffected by the Asian financial crisis⁵⁸. However, it is compelling to believe that also Taiwanese consumers rejected luxury cars from Europe and Sweden partly as an effect of the crisis.^{59,60}

⁵⁴ The import category 8703, Motorcars and other motor vehicles, from the HS-system has been used to compare with category 78 of the SITC-system. 8703 in the HS-system is a subset of the category 78 in the SITC-system.

⁵⁵ Based on data from <http://www.trade.gov.tw>, (2005-04-02)

⁵⁶ http://www.iie.com/publications/chapters_preview/383/3iie3675.pdf, (2005-04-08), p 30.

⁵⁷ Schilling G: (1998): *Deflation*, Lakeview Publishing, Short Hills, ch 16.

⁵⁸ <http://www.answers.com/topic/asian-financial-crisis?method=8>, (2005-04-08)

⁵⁹ Based on data provided by Han-Chuan Cheng at Taiwan Economic Data Center, (2005-02-01)

⁶⁰ Based on data from <http://www.scb.se>, (2005-03-27)

3.2.4 The increasing Taiwanese product categories

While the total increase of Taiwanese import during the period of study has been 51 %, it is interesting to break down the total trend into product categories because it will provide a clearer picture of what the increase consisted of. The top ten increasing Taiwanese import categories during the period of study accounted for about 85 % of the total increase.

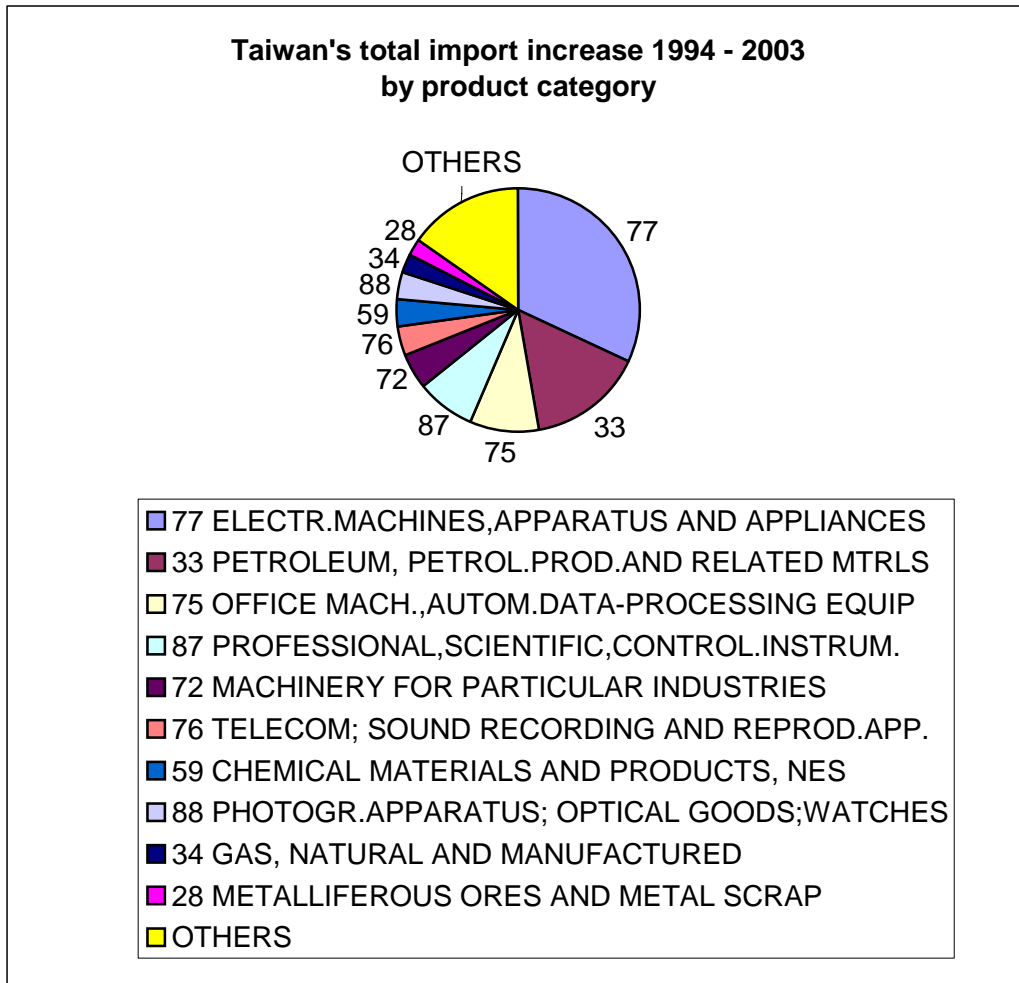


Figure 2: Taiwan's total import increase 1994 – 2003, by product category. Based on data provided by Han-Chuan Cheng at Taiwan Economic Data Center, 2005-02-01

Insignificant product categories for Swedish export to Taiwan

Many of these product categories represented a very small share of Sweden's total export to Taiwan in 1994. It could therefore be argued that those are categories where Swedish companies were not big enough or did not have enough presence in Taiwan in 1994 to really compete for the increasing market. It could also be the case that Swedish companies were not at all present within the increasing segments of these markets. The following product categories represented less than one percent of Sweden's total export to Taiwan in 1994 and less than 40 million SEK in absolute numbers.⁶¹

Percent of Sweden's total export to Taiwan in 1994

28 METALLIFEROUS ORES AND METAL SCRAP	0.87 %
75 OFFICE MACH.,AUTOM.DATA-PROCESSING EQUIP	0.61 %
88 PHOTOGR.APPARATUS; OPTICAL GOODS;WATCHES	0.39 %
59 CHEMICAL MATERIALS AND PRODUCTS, NES	0.28 %
33 PETROLEUM, PETROL.PROD.AND RELATED MTRLS	0.22 %
34 GAS, NATURAL AND MANUFACTURED	0.00 %

Table 3: Percent of Sweden's total export to Taiwan in 1994. Based on data from <http://www.scb.se>, (2005-03-28)

These categories account for 36 % of the total Taiwanese import increase over the period of study⁶². At the same time, they have only contributed to 4 % of Sweden's total increase of export to Taiwan during the period of study. Neither are these categories big contributors to Sweden's total export to all countries. Together they accounted for 6.0 % of Sweden's total export to all countries in 1994 and 6.7 % in 2003. The export in the product category 33, petroleum etc, alone accounts for 2.9 % of Sweden's total export to all countries. This may seem strange because Sweden is not an oil producing country. However, almost all the export in this category goes to other European countries and the reason for this could be because of re-exporting through Sweden. It is therefore not surprising that Swedish export to Taiwan has not managed to follow the trend of increasing Taiwanese import in this category.⁶³

The categories 28, 59, 33 and 34 are more or less raw materials, or non-knowledge intensive products, that only made up 2.2 % of Sweden's total export to all countries in 2003. It seems logical for Taiwan to source these products from nearby countries with vast natural resource.

⁶¹ Based on data from <http://www.scb.se>, (2005-03-28)

⁶² Based on data provided by Han-Chuan Cheng at Taiwan Economic Data Center, (2005-02-01)

⁶³ Based on data from <http://www.scb.se>, (2005-03-28)

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Swedish export to Taiwan in product category 88, Photographic apparatus etc, increased by 123 % during the period of study, while Taiwanese import in this category increased by 181 %. This is of course not that bad, but because of this category's small size, even small changes makes a big difference when examining the relative change. The Japanese might have been strong in this area with an export increase of similar products to Taiwan during the period of study of 3400 %⁶⁴.

In the product category 75, office machines etc, the development during the period of study has been negative with an export decrease of 24 % while Taiwanese import increased by 181 %. One explanation to this could be the enormous growth of import of these products from mainland China during the period of study. Import of these products from mainland China has grown from almost nothing to over one billion US\$ during the period of study⁶⁵. This has been possible because of the improved trade relation between Taiwan and mainland China during the 1990's.^{66,67}

More significant product categories for Swedish export to Taiwan

The rest of the product categories on the top ten list are categories where it is more likely that more competitive offerings should have been or have been able to counteract the overall trend. The logic behind this is that large Swedish export categories to Taiwan in 1994 are those where it is more likely that Swedish companies had enough presence in Taiwan to compete for the import increase. It is however still possible that the increases in these categories are largely a result of purchases of products where there are no Swedish suppliers because the product categories are quite broad. Specific products within these quite broad categories might be very different from other products supplied by Swedish companies. Unfortunately more specific data about Taiwanese import which is comparable to Swedish export data does not exist⁶⁸. The following categories are the ones left among the top ten increases in Taiwanese import when the insignificant categories in Swedish export to Taiwan have been excluded:

⁶⁴ <http://www.trade.gov.tw>, (2005-04-02). The import category 9010, Apparatus and equipment for photographic laboratories, from the HS-system has been used to compare with category 88 of the SITC-system. 9010 in the HS-system is a subset of the category 75 in the SITC-system.

⁶⁵ <http://www.trade.gov.tw>, (2005-04-02). The import category 8471, Automatic data processing machines and units thereof, from the HS-system has been used to compare with category 75 of the SITC-system. 8471 in the HS-system is a subset of the category 88 in the SITC-system.

⁶⁶ Based on data from <http://www.scb.se>, (2005-03-28)

⁶⁷ Based on data provided by Han-Chuan Cheng at Taiwan Economic Data Center, (2005-02-01)

⁶⁸ The reason is that Taiwan uses the HS-system to classify imported goods, while Sweden stopped using this system in 1994. The HS-system can be translated to the SITC-system but only to a certain level of detail.

Percent of Sweden's total export to Taiwan in 1994

77 ELECTRICAL MACHINES, APPARATUS AND APPLIANCES	5.23 %
72 MACHINERY FOR PARTICULAR INDUSTRIES	3.78 %
87 PROFESSIONAL, SCIENTIFIC, CONTROL INSTRUM	2.75 %
76 TELECOM; SOUND RECORDING AND REPROD.APP	1.15 %

Table 4: Percent of Sweden's total export to Taiwan in 1994. Based on data from <http://www.scb.se>, (2005-03-28)

48 % of the total Taiwanese import increase over the period of study has been in these categories. Swedish export to Taiwan in these categories have increased by 284 % during the period of study while import in these categories increased by 208 %. However when examining these categories one by one differences in performance can be found.

Category 77: Electrical machines, apparatus and appliances

This product category mainly consists of switches, resistors, printed circuits, transistors, valves, tubes and other electrical apparatus and machinery. In 1994 this category accounted for about 5 % of Swedish export to Taiwan. During the period of study this category has increased in importance and in 2003 it constituted 19% of Swedish export to Taiwan, which made it the largest export category. The category increased with 700 million SEK or 353 % during the period of study. Taiwanese import in this category increased by 119 % over the same time period.

This development appears positive in a Swedish perspective because Swedish export has taken a larger share of Taiwanese import in this category. However, the absolute increase of Taiwanese import in this category is as much as 131 billion SEK and this represents 36.7 % of the total Taiwanese import increase. Swedish export to Taiwan in this category is not limited to certain subcategories. Even though the import to Taiwan within the subcategories are unknown⁶⁹, this points towards that Swedish companies might have been able to compete even more in this category. The subcategories are quite narrow and Swedish companies seem to provide a wide variety of products within this category. However, it cannot be ruled out that the increase of import in this category that Swedish companies were not able to take was largely a result of purchases of products where there are no Swedish suppliers.

Category 72: Machinery for particular industries

This category consists of paper and pulp mill machinery, specialized machinery, civil engineering equipment and agricultural machinery. Taiwanese import in this category has increased by 70 % or 2.4 billion US\$ during the period of study. Swedish export

⁶⁹ The reason is that Taiwan uses the HS-system to classify imported goods, while Sweden stopped using this system in 1994. The HS-system can be translated to the SITC-system but only to a certain level of detail.

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to Taiwan in this category increased only 13 % or 18 million SEK. Because of the diversity of products represented in this category and lack of more specific data, no conclusion can be made regarding if this development should be seen as positive or negative. Total Swedish export to all countries in this category increased by 57 % during the period of study. This suggests that a more positive development could have been possible. Anyway, this product category's impact on the total trend has not been significant. Assuming that Swedish export in this category had managed to follow the increase of the Taiwanese import in this category, Swedish export to Taiwan would have increased by 18.0 % instead of 15.7 %.

Category 87: Professional-, scientific-, control instruments

This category consists of optical, medical, measuring, checking and controlling instruments and apparatus. Swedish export to Taiwan increased by 60 % or 64 million SEK during the period of study. Swedish export to all countries in this category increased by 87 % over the same period of time. However, the Taiwanese import increase was as much as 161 % or 3.8 billion US\$ during the period of study. A more positive development of Swedish exports to Taiwan in this category might have been possible with more competitive offerings considering that Sweden only accounted for 0.2 % of the 3.8 billion US\$ increase.^{70,71}

Category 76: Telecom; Sound recording and Reprod. app

When looking at Swedish export to Taiwan over the period of study this product category consists almost exclusively of the subcategory, telecommunications equipment. As discussed earlier, telecommunications equipment has had a large impact on the ups and downs of total Swedish export to Taiwan during the period of study. This category has also become the second largest product category for Swedish export to Taiwan in 2003 from not being on the top ten list at all in 1994. The increase of Swedish export to Taiwan in this category has been 600 million SEK from very low numbers in 1994, while Taiwanese import has increased with 15 billion SEK or 118 %. Swedish export in this category represents 4.2 % of the total Taiwanese import increase. Considering that Sweden's share of Taiwan's total import is only 0.44 %⁷², the import increase in this category can only be interpreted as positive. An explanation for this is of course the company Ericsson's strong position on the telecom market. This category is the second most important export category for Swedish total export to all countries after road vehicles.

⁷⁰ Based on data from <http://www.scb.se>, (2005-03-28)

⁷¹ Based on data provided by Han-Chuan Cheng at Taiwan Economic Data Center, (2005-02-01)

⁷² 2003, Calculated in US\$

3.2.5 Conclusions

- The Taiwanese import in many of the most important product categories for Swedish export to Taiwan in 1994 did not increase as much as the overall trend. In fact many decreased; most notable is the category, road vehicles, which alone can explain why Swedish export to Taiwan has not followed the upward trend of Taiwanese import.
- Import to Taiwan from other Asian countries increased very much between 1994 and 2003. Most notable is import from mainland China. It is likely to believe that a great deal of the increase of import from mainland China have consisted of products that do not directly compete with Swedish products.
- In the Taiwanese import product categories that increased a lot, and where Sweden had a considerable export size to Taiwan in 1994, Swedish export performed well during the period of study.

4 Developing the marketing research method

In this chapter a business-to-business marketing research method for surveying offering selection factors that works for knowledge-intensive offerings and in international environments is developed.

4.1 Introduction

The starting point for surveying the factors considered when a business customer makes decisions about which product to purchase and from which company, is the study of the marketing research models and supplier selection models that the literature prescribe. From doing so, essential insight in what is generally considered important is provided. It would even be possible to use one of the models as a tool for the investigation. Very few marketing research models are⁷³, however, intended for business-to-business marketing research. Business purchasers usually face more complex buying decision because purchases often involve large sums of money, complex technical and economical considerations, compared with consumer purchases⁷⁴. Considering that marketing literature very often is divided into those that discuss business-to-consumer relations and those that discuss business-to-business relations, it is reasonable to assume that there is a big difference between these types of relations. A business-to-business marketing research method therefore has to specifically address those factors relevant in a business-to-business relation such as factors concerning relationships. Further more, the models currently available⁷⁵ are vaguely described, which means that they are not providing a “hands-on” method, and the containing factors are few, broad and unable to provide the whole picture. These models are also solely focusing on what is considered important at present time and not in the future, and are developed for application in a certain industry or an industry segment.

In order to develop a well thought-out marketing research method suitable for the purpose, an extensive literature search and review had to be done. First, a model of which factors that a business customer considers when making a purchasing decision had to be constructed, influenced by existing literature. After that, the model had to be extended into a method for surveying these factors. The purpose of making the method work for knowledge-intensive offerings and in international environments had to be considered during the whole process e.g. when selecting factors to examine.

⁷³ On the basis of article search in the article library; Electronic Library Information Navigator <http://www.elin.lub.lu.se> (2005-02-01)

⁷⁴ Kotler P et al (2005): *Marketing: an introduction* (7th ed), Pearson Prentice Hall, Kendallville. p 167-168

⁷⁵ On the basis of article search in the article library Electronic Library Information Navigator <http://www.elin.lub.lu.se> (2005-02-01)

The method was developed because a lack of such a method was identified and because it was needed to survey Taiwanese business customers.

4.1.1 Field of application

Besides being a way to produce interesting information about Taiwanese business customers, the marketing research method itself can be valuable for the target audience of this thesis because it should be useful in other contexts or markets. The marketing research method therefore constitutes a purpose of its own in this thesis. A company wanting e.g. to approach a new geographical market could use the method developed in this thesis to survey the purchasing criteria of potential business customers in the new market. The model could also be a way for a business purchaser to evaluate incumbent offering from different suppliers. By considering all the factors in the model when evaluating incumbent suppliers there should be less risk that the buyer will overlook important dimensions. The model aims to provide a framework of important factors. Modifications are of course necessary to fit certain industries or if more detailed factors are needed.

The complexity of research design is greatly increased when working in an international, multicultural and multi-linguistic environment⁷⁶. Special considerations have been made in order to make the marketing research method work for knowledge-intensive offerings and in international environments. International environment, defined by the authors of this thesis as an environment where the supplier and the customer have different home bases, implies special consideration to factors related to the nature of international business such as the level of local presence of the supplier.

Products and services can be considered knowledge-intensive if they contain a large amount of problem solution, creativity and non-standardized solutions⁷⁷. An offering containing a large amount of the mentioned factors could therefore be considered as knowledge-intensive. Equally, high-tech products could be considered as knowledge-intensive. A high-tech product is produced by a high-tech company, which is defined by OECD (1994) as a company with a considerable amount of research and development expenditures relative the turnover⁷⁸. Claiming that a high-tech product is one that is produced by a high-tech company has to assume that the company's research and development efforts are materialized in the company's products. With a knowledge-intensive offering, certain factors related to the complexity of the product such as expected technical life length and technical support cannot be neglected. It should be pointed out that the marketing research method developed in this thesis ought to have a wider field of application than just in international environments and

⁷⁶ Douglas S, Craig S: (1983): *International Marketing Research*, Prentice Hall, Englewood Cliffs, p 211.

⁷⁷ Glesbygdverket (1997): *Åtgärdsprogram för kunskapsintensiv produktion i gles- och landsbygd*, p 9.

⁷⁸ A company with more than 5% expenditure on R&D relative the turnover is defined by OECD (1994) as a high tech company. <http://www.oecd.org>, (2005-05-02)

for knowledge-intensive products. However, it was developed for this purpose and it should therefore at least work in this context.

4.1.2 Cross-cultural market research

International research is different from domestic research because it is more difficult and costly to implement. Market surveys are at best photographs of the market; they are not the market itself. Cavusgil and Godiwalla (1982) stress the high level of uncertainty in international markets and the limited availability of objective information, both in quantity and quality. According to Usunier (2000) this may explain why international marketing decisions are dominated by the influence of subjective and perceptual factors. However, the sophistication of the market research method increases with a higher degree of involvement in foreign markets, as measured by the percentage of export profits to total company profits. In general, market research measurement instruments adapted to each national culture (the emic approach) offer more reliability and provide data with greater internal validity than tests applicable to several cultures (the etic approach, or culture-free tests). But use of such instruments is at the expense of cross-national comparability and external validity: results are not transposable to other cultural contexts. When adapting an etic or culture-free approach a number of equivalence problems have to be considered, otherwise the data cannot be compared across cultures. There are six main issues regarding cross-cultural equivalence:⁷⁹

Conceptual equivalence: If the concepts used have similar meanings across cultures.

Functional equivalence: If similar activities perform different functions in different societies.

Translation equivalence: If differences in languages make it impossible or difficult to achieve the same meaning of words and expressions.

Measure equivalence: Variations in the reliability of research instruments caused by e.g. differences in knowledge of different concepts across cultures.

Sample equivalence: Different behaviour in different countries may call for a difference in what an appropriate sample should be.

Data-collection equivalence: Variations in response patterns across countries caused by e.g. differences in response style and reluctance to answer certain questions.

Maruyama (1990) recognizes the problem of criticality dissonance, which means that respondents disguise or transform responses because of fear that the information may be misused. Respondents may manipulate the survey or interview to benefit their own

⁷⁹ Usunier J-C (2000): *Marketing Across Cultures*, (3rd ed), Prentice Hall Europe, Singapore, ch 7.

purposes.⁸⁰ Usunier (2000) claims that international market research is full of criticality dissonance. Unique features of cultural behaviour cause non-equivalence. It is impossible to uncover these levels of non-equivalence if the instrument and methodology prevent them from appearing. A pragmatic solution according to Usunier is to ask the interviewees their opinion of the relevance of questions, words and concepts used in the questionnaire at the end of the normal interview process. Interviewees should be given the opportunity after the normal answering process to elaborate freely on what they think of the questions.⁸¹

4.2 Developing the model

Kotler et al (2005) argues that there are three major types of buying situations; the straight rebuy, the modified rebuy and the new-task. In a *straight rebuy*, the buyer reorders something without any modifications. It is usually handled on a routine basis. Based on past buying satisfaction, the buyer simply chooses from the various suppliers on its list. In a *modified rebuy*, the buyer wants to modify product specifications, prices, terms, or supplier. The modified rebuy usually involves more decision participants than the straight rebuy does. A company buying a product or service for the first time faces a *new-task* situation. In such cases, the greater the cost or risk, the larger the number of decision participants and the greater their effort to collect information will be.⁸² More focus might be put on certain offering selection factors in a new-task situation than in a modified rebuy situation. However relevant factors should be the same, which is why the developed model in this thesis aims to be general in the sense that it covers both a modified rebuy and a new-task situation.

4.2.1 The concept of offering selection

In an effort to construct a method for surveying the factors considered when making purchasing decisions, some considerations concerning the frequently used term “supplier selection” had to be made. In order to provide a more general method that also include the “one time-buy” situation, the chosen term is instead “offering selection”, because “supplier selection” could make one think of only rather long-term relations. The actual offering is in the centre but the supplier characteristics, often emphasized in the supplier selection models, are also considered among the factors that influence which offering the customer chooses.

4.2.2 The offering

The supplier task and goal is to solve a customer problem. The problems of business customers are often complex and can rarely be solved by a physical product alone. Ford et al (2005) define a supplier’s offering as a package consisting of different proportions of the elements of physical product, service, advice, adaptation and

⁸⁰ Maruyama M (1990): *International meta-marketing*, Human Systems Management, vol 9, p 29 - 42.

⁸¹ Usunier J-C (2000): *Marketing Across Cultures*, (3rd ed), Prentice Hall Europe, Singapore, ch 7.

⁸² Kotler P et al (2005): *Marketing: an introduction* (7th ed), Pearson Prentice Hall, Kendallville, p 169.

logistics and the costs that it involves. Each element may be more or less important depending on the customer's problem.

Products: These are the physical part of the offering. This is what the customer can see and feel after the purchase. Just because they are the most obvious element of an offering, products are often wrongly considered to be the most important element.⁸³

Services: These can be a major part of the offering. This is for three reasons: first, the product element of many offerings has little value without the associated service. Common examples include the need for upgrades for software, maintenance service for equipment, or training. Second, many customers now purchase a service instead of purchasing a product. Examples include companies that lease rather than buy car or production equipment, or contract out the cleaning of their premises rather than buying their own cleaning equipment. Finally, business services have increased in importance as companies depend more and more on "external" technologies, rather than retaining expensive skills in-house.

Logistics: Logistics are not just the ways in which the other elements of an offering are delivered to the customer. In many cases logistics can be the most vital element of an offering for competitive success, particularly when the product and service elements are undifferentiated between different competitors. E.g. a supplier may seek to differentiate its offering from others by providing just-in-time, zero-inventory deliveries and in-plant storage of parts.

Advice: Concerns all the activities of a supplier, which are aimed at increasing the customer's understanding. The importance of advice in an offering will depend on the customer's uncertainties.⁸⁴

Adaptation: Suppliers need to adapt different elements of their offerings to meet customer requirements and to demonstrate commitment to their relationships.⁸⁵

In developing the model containing the expected factors considered when making purchasing decisions, the concept of offering has partly served as a framework. The product, service related to the product, logistics and cost related to these elements has been applied as separate categories. Unlike those, advice and adaptation are related to the abilities and characteristics of the supplier. These elements are therefore captured in the supplier characteristics category.

⁸³ Ford D. et al (2002): *The Business Marketing Course-Managing in Complex Networks*, John Wiley & Sons Ltd, Guildford, p 121-122.

⁸⁴ Ford D. et al (2002): *The Business Marketing Course-Managing in Complex Networks*, John Wiley & Sons Ltd, Guildford, p 122-123.

⁸⁵ Ford D. et al (2002): *The Business Marketing Course-Managing in Complex Networks*, John Wiley & Sons Ltd, Guildford, p 139.

4.2.3 The supplier characteristics

It could be argued that not all factors considered in a purchasing process are related to the actual product, service related to the product, logistics and costs. It is also of great importance that the supplier characteristics of the provider of the offering are favourable and suitable for the activity. A supplier with local presence can e.g. imply easier communication, faster service and better market knowledge, which can result in increased comprehension of the customer's need. Further, that a supplier makes large efforts in securing its supply chain, e.g. applies techniques of risk management, decreases the possibility of supply failure to occur. Finally, a high technical capability for innovation indicates an ambition for providing high technology products and being first to market with new products in the future, giving its customers competitive advantage.

4.2.4 Factors that provide the whole picture

The factors that buyers consider the most when making purchasing decision are the factors that the suppliers have to focus on to win orders. There exist a number of different supplier selection models consisting of factors that constitute the foundation for this model. However, as mentioned earlier in this chapter, the factors proposed are most often too few and broad to be able to provide the whole picture of what is considered even if the structure and the overall procedure are satisfying.

To understand a business requires that the discussion is both comprehensive and clear. Many companies perceive strategy to be broadly based and are content with arriving at all-embracing but essentially unclear statements. Using words that convey more than one meaning leads to misunderstanding and an inadequate base on which to establish agreed direction. Therefore companies that use descriptions of the success factors in their markets such as *customer service* are ill served. Customer service can mean any number of things. The key is to agree on which dimension of customer service that is the important criterion. The reason for this is to avoid a misinterpretation of which dimension of a factor that is the most critical to the business. Furthermore, reviewing the importance of the same factor in different markets can also embody misunderstandings. Many companies today are selling products in markets characterized by difference and not similarity and these essential insights need to be clearly identified as a prerequisite for sound strategy development. For instance, take the aspect of *delivery*. Separating the issue of "on time" from that of "speed" (that is, short lead times) is an essential part of understanding the key dimensions of a market. Describing both under the one word *delivery* will hide essential insights.⁸⁶ The absence of such insight therefore highly limits the possibilities for the supplying company to develop a strategy that puts the company in a favourable position.

4.2.5 The offering selection model

The factors in this model are offering selection factors, that is to say factors influencing the buyer's selection of offering. To collect and select relevant factors

⁸⁶ Hill T. (2000): *Manufacturing strategy-Text and cases* (2nd ed), Palgrave, Bristol, p 36 - 37.
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that might be considered in an offering selection process, a number of articles and other literature have served as a source of influence⁸⁷. The selected and defined factors are grouped into value-providing factors and cost factors. Ford (2002) includes cost in his definition of the offering, but he does not see it as one of the elements of an offering. This model has a slightly different perspective than Ford. Ford describes the elements that can be used to solve the customer's problem while our aim of surveying offering selection factors suggests that cost factors have to be included in model. The value-providing factors are grouped into the four different categories; product, service provided with the product, logistics and supplier characteristics. The offering selection model can be illustrated as follows:

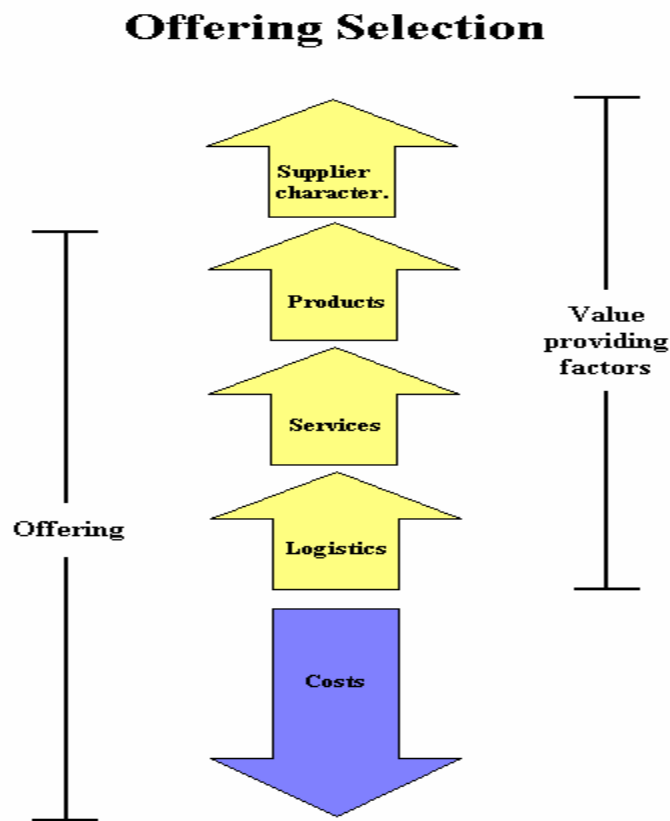


Figure 3: The offering selection model.

⁸⁷ For the complete list of articles and literature that served as an inspiration for the offering selection model see reference list.

Value providing factors

Product

Aesthetic design:

Colour

Material

Shape

Environmental impact - That the product is not harmful to the environment

Expected physical life length - Time before the product will have to be replaced

Expected technical life length - Time before the technology that the product is based on becomes out-dated

Percentage of rejection - Proportion of received products below quality standard

Product diversity – That the product can be used for several and different purposes

Product performance - Precision, deviation from ideal value, how well the product performs its main function

Product safety - Safe to use

Product reliability - How often the product breaks down and has to be repaired

Reputation of brand

Services provided with the product

Availability of spare parts

Financial arrangements:

Credit - Possibility for an instalment plan

Quantity discount

Installation of product - The product might require to be installed at your facility

Insurance and guarantees

Maintenance of product - Regular preventive maintenance

Repair of product - In case of break down or malfunctioning product

Support - For example: Help-lines and education of your company's staff

Updates of product - For example: Software- and documentation updates

Logistics

Delivery reliability:

On time

Right quantity

Delivery speed - The time from ordering until delivery

Environmental impact of transportation method - That the transportation method is not harmful to the environment

Financial arrangements - For example: Routines of payment, in suitable currency, security arrangement

Information sharing - For example: Information about when your delivery will arrive or how much your supplier has in store

Supplier characteristics

Ability to assist business efficiency - The ability of the supplier to help your company to efficiently use the product you are buying

Ability to be flexible - The degree to which the supplier can be flexible and respond to your company's changing demand

Commitment to improvement - The degree to which the supplier is committed to continually improve its products and processes

Commitment to relationships - The degree to which the supplier is willing to build a strong relationship with your company

Communicational ability - Ability to efficiently communicate through personal contact and IT-systems

Company culture and values

Environmental friendliness - The degree to which the supplier acts in an environmentally friendly way

Financial condition - The credit rating, financial track record and liquidity of the supplier

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Local presence – That the supplier has a local office in the country where your company is located

National home base - The country where the supplier originates and/or has its production

Need advice ability - The supplier's ability to understand your needs and to suggest a solution

Openness - The degree to which the supplier is willing to be open about its business with you

Owner - Who the owner of the supplier is

Personal relations - That your company wants to favour a certain supplier because of a close relationship

Product assortment - The total amount and diversity of products that the supplier is providing

Secured supply chain - That the supplier secures their supply chain in order to fulfil their obligations to your company

Stable processes - That the supplier operates internally in a way that insures fulfilment of their obligations

Supplier reputation

Supplier size relative to your company size – That your annual orders as a percentage of your supplier's overall business is significant

Technical capability for innovation - Ability to provide new innovative products

Trustworthiness - That you feel that you can trust the supplier

Cost factors

Cost of spare parts - The cost of buying spare parts if the product needs to be repaired

Cost of updates, maintenance and repair

Organisational- and process change related cost - Costs that occur because buying the product requires your organization to adapt

Price - The price that is paid to the supplier for the product and included services

Relationship costs - The cost of maintaining a relationship with the supplier

Switching costs - The cost of changing supplier in the future if needed

Transportation costs - The cost of transporting the goods from the supplier

4.3 Developing the method

In succeeding with the survey, several factors are crucial such as: the structure of the questionnaire, selected measurement techniques as well as the survey process, the method.

4.3.1 Selected measurement techniques

The process by which the factors under investigation are turned into quantified data is called measurement, and it is a fundamental part of marketing research. Measurements requires that an appropriate scale of measurement is used and that the “amount or degrees of a property”, i.e. the property’s characteristics, are placed on this scale of measurement. The two main methods of measurement in marketing research are; structured or semi-structured lists of questions, both open and closed, which may be used to investigate attitudes, beliefs, feelings, behaviour, knowledge and demographic characteristics, and the other is attitude scales. These scales can be divided into four different types:

Nominal scales: Objects are placed in a category because they are identified with respect to some predetermined variable.

Ordinal scales: Objects are ranked in an order depending upon the amount of a variable which is associated with that object or which it possesses.

Interval scales: These use equal units of measurement with an arbitrary zero point.

Ratio scales: With a ratio scale, there is a predetermined zero point. They are similar to scales used in everyday life to measure, e.g., height and weight.⁸⁸

Using both structured questions and scale technique increases the validity of the data collected. For that reason, the method is structured as following: The survey begins with a few open questions, following by a questionnaire to fill in by the respondent, containing factors to rate (ratio scale) and factors to place in categories (nominal scale), and ends with a few more open questions.

The advantages of using open questions are the qualitative aspects and the possibilities of getting a more detailed and balanced picture of the situation. The

⁸⁸ Webb J R (1992): *Understanding & Designing Marketing Research*, The Dryden press.,Chatham, p 26 – 27.

disadvantage is that the questions always are more difficult and time consuming to put together and analyse than the closed questions.⁸⁹

Both an inductive and deductive approach was utilized because using only one of the approaches could have lead to undesired results. Using only an deductive approach and thus only confronting the respondents with factors in an offering that are suspected to matter could have meant that essential perspective would have been lost. Only using open questions without having any preconception and thus a more inductive approach could have meant that some depth had been lost because it was suspected that answers then would have turned out to be of general nature, like quality or service. Using both approaches by first asking open questions and then letting the respondent consider factors from the model developed in this thesis made it possible to test the convergent validity and to analyse the differences of the two approaches to achieve a better understanding.

In order to maximize the possibility of collecting valid data, a personal interview with people highly influencing the purchasing decisions was selected as a foundation for surveying. Mcquarrie (1991) argues that interactive face-to-face communication has been shown to be superior when the material to be transmitted is novel, complex, and ambiguous⁹⁰. If the interview is scheduled at the respondent site, observation can supplement communication⁹¹. Also, face-to-face contact is particularly important when the user of a product are very different in background or outlook from the product designers⁹².

4.4 Interview technique

The situation of the planned interview is of a great magnitude. Factors such as time, place and presence of other listeners can have large impact on the result. It is always preferable to set aside a bit more time than estimated necessary for the interview, to avoid a stressful situation for both parts and rising irritation when the interview exceeds the appointed time frame. Also, which time of the day that is most suitable for the interview to take place should be considered. The place selection is essential. It is important to choose a location were the respondent feel safe and secure, a place well known, e.g. the respondent's office. The presence of other listeners is disturbing regardless to if it is outsiders or known people of the respondent, and should therefore be avoided.⁹³

⁸⁹ Dahmström K (2000): *Från datainsamling till rapport- att göra en statistisk undersökning* (3rd ed), Studentlitteratur, Lund, p 103 – 104.

⁹⁰ Mcquarrie E F (1991): *The customer visit: Qualitative research for business-to-business marketers*, Marketing research, March 01.

⁹¹ Daft et al (1987): *Message Equivocality, Media Selection and Manager performance: Implications for information system*, MIS Quarterly (September).

⁹² Mcquarrie E F (1991): *The customer visit: Qualitative research for business-to-business marketers*, Marketing research, March 01.

⁹³ Andersson B-E (1994) *Som man svara får man svar* (2nd ed). Rabén Prisma. Kristianstad. p 173 – 174.

Just as with other research methods that take place within a social context, the nature of interchange between the researcher and the respondents is important. The reaction of the respondents to the interviewer can dominate the way that they view the research situation. The interviewer's accent, mode of dress, body language, facial expressions, timbre of voice etc., are all factors which the interviewer will have to be prepared to manipulate to give a first impression to the respondents which reassures, encourages, flatters.⁹⁴

A way of establishing rapport is to describe to the interviewee the boundaries that circumscribe the interview situation. This will give the respondent a context for the research and for their answers. Respondents should also be told as much about the purpose of the research as possible. The interviewer should stress the value that will be placed upon the respondent's answers and the fact that they will be treated in the strictest confidence.⁹⁵

In order to keep the conversation spontaneous and be able to capture the respondent's opinion and point of view, the interviewer have to be attentive and open-minded at all time. Non-verbal reactions of the respondent should be noted.⁹⁶

4.4.1 Questionnaire design

Good questionnaires are those that validly fulfil the objectives of the research with a minimum invasion of error and bias.⁹⁷ When constructing a questionnaire, several considerations have to be made. Initial considerations involve what type of information that is required, the type/nature of the respondents, and the type of method by which the survey is to be administered. Next, the questions content. Is the question necessary? If not, then omit the question. Does the respondent comprehend the question? It is e.g. important to formulate the questions with respect for the proposed respondents to facilitate comprehensions. Is the question sufficient to elicit the required data? Avoid double-barrelled questions (two questions in one sentence), and questions containing non-specific words.⁹⁸

It is important to keep the sentences short and concise, and to use clear and simple words and avoiding ambiguous, vague, and biased words to minimize misinterpretations.⁹⁹ If it is necessary to use special terminology, e.g. technical language, and shortenings, it is important to explain those expressions¹⁰⁰. Further on, questions that have a negative formulation can be confusing, and hypothetical

⁹⁴ Webb J R (1992): *Understanding & Designing Marketing Research*, The Dryden press, Chatham, p 122 – 123.

⁹⁵ Ibid

⁹⁶ Holme I M, Solvang B K (1997): *Forskningsmetodik* (2nd ed), Studentlitteratur, Lund, p 105.

⁹⁷ Webb J R (1992): *Understanding & Designing Marketing Research*. The Dryden press. Chatham, p 91 – 111.

⁹⁸ Ibid

⁹⁹ Ibid

¹⁰⁰ Dahmström K (2000): *Från datainsamling till rapport- att göra en statistisk undersökning* (3rd ed), Studentlitteratur, Lund, p 100.

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questions encourage respondents to guess and implicitly goad them into wild speculation, generating non-valid and inaccurate data. In general, questions that ask respondents to make an estimate or to make generalisations are a great potential source of error. Also, if questions do not state the essential assumptions upon which the question is dependent, it can produce inflated or deflated responses. E.g., the question “Are you in favour of enforcing all cars to be fitted with catalytic converters in order to help reduce atmospheric pollution?” would tend to produce a stronger positive response than it would if the implicit assumption “...even though it would also increase petrol consumption by 15 %” had been added.¹⁰¹

The position of the responses can be crucial. In some cases, bias may arise when there is a preferential choice of one alternative over others, not because this is the respondent’s choice that more accurately reflects the true state of affairs but because of the physical position of the alternative on the menu.¹⁰²

When using scales, balanced instead of unbalanced alternative responses is in most cases preferable, and a set of those would consist of something like the following, where there are an equal number of responses on each side of the centre/neutral point.¹⁰³

Question, “What do you think of this master thesis so far?”

1	2	3	4	5
Very boring	Boring	Indifferent	Interesting	Very Interesting

Questions that require the respondent to rank the alternatives should be avoided. Ranking questions can give rise to practical problems with the analysis. This occurs when some of the respondents are unable or will not rank a large amount of alternatives, leading to unanswered alternatives.¹⁰⁴

Question sequence must also be considered. Ensure that all questions related to one topic are asked before moving on to another topic, or else it will be difficult for the respondent to follow the thoughts, and it will also make the analysis of the questionnaire unnecessarily complicated.¹⁰⁵

¹⁰¹ Webb J R (1992): *Understanding & Designing Marketing Research*. The Dryden press, Chatham, p 91 – 111.

¹⁰² Ibid

¹⁰³ Ibid

¹⁰⁴ Dahmström K (2000): *Från datainsamling till rapport- att göra en statistisk undersökning* (3rd ed), Studentlitteratur, Lund, p 102.

¹⁰⁵ Webb J R (1992): *Understanding & Designing Marketing Research*. The Dryden press, Chatham, p 91 - 111.

Questionnaires should be easy for the respondent to use; ease of use will enable the responses to be recorded with the minimum of error. Questionnaire layout design considerations include: Size and spacing; keeping the bulk of the questionnaire as low as possible and using spacing to break up solid blocks of text, makes reading easier. Type face and colour; using different styles makes important parts to stand out and add interest. Instructions; has to be complete but precise and kept to a minimum.¹⁰⁶

All of the above had to be taken into account when designing the questionnaire. Special attention was drawn to Webb's (1992) opinion that questions that require ranking should be avoided. It was instead decided that the respondents should rate how much they considered different factors on a ratio scale; letting those ratings constitute a foundation for ranking the factors in the analysis stage. The sequence of the questions was discussed but in the end the factors were put in alphabetical order under each main category because no other logic held enough ground to be motivated. A "not applicable" (N/A) alternative was added to incorporate a possibility for the respondent not to rate a factor that does not apply to the offerings the respondent are purchasing. The N/A alternative was added to all factors even if many factors should apply to all types of offerings. This was done as a test to check if factors that should apply to all types of offerings would be ticked N/A. If this would occur it would probably mean that the respondent did not understand the factor.

4.4.2 Order-winners and qualifiers

Hill (2000) points out the importance of separating the factors into categories of order-winners and qualifiers when evaluating. Qualifiers are those criteria that a company must meet for a customer to even consider them as a possible supplier. Providing or attaining these criteria do not win orders. Order-winners are those criteria that win the order. To provide qualifiers, companies need only to be as good as competitors; to provide order-winners, they need to be better than competitors. Both are essential if companies are to maintain existing market share and grow. Order-winners and qualifiers are both time and market specific.¹⁰⁷

The authors of this thesis believe that it provides useful additional information to the supplier if important offering selection factors are characterised either as an order-winner or a qualifier. This is because factors like e.g. product safety could be considered an important factor but customer A may only care if the product meets a certain minimum requirement. Customer B may also consider product safety as very important but they are not only interested in a minimum level. Product safety is actually a criterion that wins orders. The conclusion of the answers from customer A and customer B will be different. In the case of customer A, it is very important to meet the minimum level but it is of no use to exceed this level because it will not win the order. To win the order of customer B it is however important to have as high product safety as possible. This is why an attempt to determine if the factors are order-winners or qualifiers was made in the questionnaire.

¹⁰⁶ Webb J R (1992): *Understanding & Designing Marketing Research*. The Dryden press, Chatham, p 91 – 111.

¹⁰⁷ Hill T (2000): *Manufacturing strategy-Text and cases* (2nd ed), Palgrave, Bristol, 2 ed, p 36.

Determining Order-Winners and Qualifiers

Seeking to clarify and understand the order-winners and qualifiers requires, according to Hill, soundings from four different sources:

Functional perspectives: The internal perspectives of those functions that are engaged in the provision of products or that interface with the marketplace hold important insights into customer requirements.

Actual orders: Tracing the volumes, lead times, margins and other relevant characteristics of placed orders will bring an essential perspective when evaluating opinion.

Customer reviews: Discussions, with the customer, based on the actual orders data highlighting the areas that need improvement gives important understanding.

Customers' views: Checking with customers on what they believe they require.¹⁰⁸

The feasibility of using e.g. the actual orders method could be questioned because in order to determine the qualifying and order-winning factors by analysing past orders it ought to be necessary to obtain data from competing firms. Otherwise it is impossible to compare and actually know which factors you excelled over the competitor and therefore won the order. Specific data from competing firms might be very difficult to get but this is not something that Hill addresses. Putting too much focus on the hard order data might also hide the fact that certain supplier characteristics could be important order-winners and qualifiers.

On the basis on the previous discussion, customers' views will constitute the source of data for determining order-winners and qualifiers in this marketing research method. As Hill does not suggest any survey method, the starting point for this survey is the definitions of order-winner and qualifier, which was formulated as statements for the respondent to consider. A strive for conformity among the statements connected to each factor characterized the formulation of the statements. Conformity among the statements was only possible to a certain extent because some factors were more logically treated as continuous- and others as a discrete variables and this made it difficult to have exactly the same statements for different variables. The purpose of the statements was to separate the proposed offering selection factors into the three different groups of order-winners, qualifiers and factors that have very little or no implication on the decision making process. Open questions were used before the respondents were confronted with the statements. The point of this was to compare the answers of these methods to find out if different ways of extracting the order-winners and qualifiers would get different results, and also to function as a complement to the survey.

¹⁰⁸ Hill T (2000): *Manufacturing strategy-Text and cases* (2nd ed), Palgrave, Bristol , 2 ed, p 83 - 84.

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The questionnaire containing the scales and statements was designed as follows:

How much does your company consider the following factors when choosing between different suppliers?

Example of a continuous variable

	Not at all	2	3	4	5	N/A
<i>Environmental friendliness</i>	1					[]
<i>(The degree to which the supplier acts in an environmentally friendly way)</i>						

Statement 1:

We require a supplier to have a critical minimum of *environmental friendliness* even to be considered in our supplier selection process.

DON'T AGREE AGREE

Statement 2:

Environmental friendliness is usually one of the factors that **finally determine** which supplier we choose.

DON'T AGREE AGREE

Example of a discrete variable

	Not at all	2	3	4	5	N/A
<i>National home base</i>	1					[]
<i>(The country where the supplier originates and/or has its production)</i>						

Statement 1:

We require a supplier to have a certain *national home base* even to be considered in our supplier selection process.

DON'T AGREE AGREE

Statement 2:

National home base is usually one of the factors that **finally determine** which supplier we choose.

DON'T AGREE AGREE

Interpreting the results of the statements

The statements and the scale is deliberately somewhat overlapping to build in a test of the construct validity. A hypothesis was formulated that some answer combinations would not be likely to appear and if they did, the method itself should be questioned if no logic for this specific pattern could be found. The following way of interpreting the answers was developed:

		Statement 1	
		Agree	Don't agree
Statement 2	Agree	Order winner	Not likely to appear
	Don't agree	Qualifier	Unimportant

Figure 4: Interpreting the results of the statements

The reason why “don't agree” to statement one and “agree” to statement two was viewed as not likely to appear is that it seems illogical to argue that a minimum level of a factor is not required but the factor finally determines which supplier to choose. That is why the amount of that answer combination was agreed to be an indication of the validity of the answers. It was also agreed that a very low rating on the scale combined with statements indicating an order-winner, or a high rating combined with statements indicating that it was an unimportant factor, should be seen as illogical answers and thus question if the method is working to extract order-winners and qualifiers.

4.4.3 Need improvement

It is valuable to know which the most important offering selection factors are and whether these are order-winners or qualifiers. This provides a solid ground for competitiveness. However, being competitive today gives no guarantees for success tomorrow. Companies must continuously develop and improve their activities in

order to sustain their international competitiveness¹⁰⁹. A combination of information about the decisive value-providing factors today together with information about those factors that need improvement will result in a clear picture of factors likely to become important in the future. Those that need improvement should be factors where the customer will direct extra attention in the future. The reason why the customer is not asked which of the cost factors that need improvement is that it is reasonable to believe that the customer thinks that it is the sum of all the costs that matters. It is not logical that the customer especially cares about which specific cost that should be lowered. When it comes to the value-providing factors, however, it is likely that certain factors are more important than others. The customers should therefore be asked to choose the factors that need improvement in each of the four categories of value-providing factors.

4.4.4 Feedback on the survey

In order to obtain feedback from the respondents, two questions were added to check the respondent's opinion of the questionnaire. By asking for other important factors not included in the questionnaire after the respondent has completed the questionnaire, it is possible to establish if the factors provide the whole picture. Further, also asking the respondents' opinion of the questionnaire makes it possible to get a hint of the relevance of the factors that might not be captured just by analyzing the answers from the questionnaire.

4.5 Summary

This marketing research method includes open questions and a questionnaire, and it shall be performed as personal interviews with the purchasing manager, the president or other people highly influencing the purchasing decisions. The interviews shall preferably be carried out in the respondent's working environment.

The open questions concern which factors considered the most when making purchasing decisions today, order-winning and qualifying factors, the company's selection procedure and the respondent's view of the questionnaire. The questionnaire contains:

- Rating factors individually, where the respondents rate the factors on a 5-degree scale from "not at all" to "very much" on the question "How much does your company consider the following factors when choosing between different suppliers?". The purpose is to survey which factors that are considered the most today. However, the respondents are not requested to rank the factors. This is instead performed in the analysis stage by the researcher.

¹⁰⁹ <http://www.ivawebb.se/produktion/download/rapporter/Framtida%20Produktion.pdf>, (2005-04-20)

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- Statements about each factor with the purpose of dividing them in groups of order-winners and qualifiers. The statements are based on Hill's definitions of order-winner and qualifier.
- Questions about which factors that need improvement, giving the suppliers useful insights into important offering selection factors in the future.

5 Applying the method in the Taiwanese high-tech industry

In this chapter the methodology for achieving the purpose of suggesting offering selection factors in the Taiwanese high-tech industry, to focus on to win orders for Swedish companies with knowledge-intensive offerings, is discussed.

5.1 Overall approach

The business-to-business marketing research method for surveying offering selection factors that was developed was used to acquire data. The method implies survey research in the form of personal interviews. It was decided to interview important customers of a number of Swedish high-tech companies in Taiwan. Actually speaking with the customers was seen to be the best way to get insights into what they consider when choosing between different suppliers. It would have been possible to meet the purpose by interviewing a wider variety of respondents and informants such as industry experts and current Swedish suppliers. Getting the actual views of the customers was however considered to be the most suitable method, because it is the customers that make the decisions about which offering to choose. Other data collection methods such as experimental research or observation did not seem feasible or appropriate for the purpose.

The Taiwanese high-tech industry is a large population to draw conclusions about and that makes it difficult to both go deep and wide on a limited timeframe. The choice between having a small and a large sample was a difficult one. A large sample would have given more weight to the generalization because of a higher reliability, but it would have made it more difficult to use personal interviews as the developed marketing research method implies. Not using personal interviews and turning to some kind of internet-based questionnaire instead would have been possible. However, having in mind the specific problems of international marketing research related to language and different interpretations of conceptions, it was decided that personal interviews would be more suitable as the developed method prescribes. This would minimize misinterpretations that result in data with a low validity. Choosing to conduct in-depth personal interviews meant that the sample size had to be smaller because it takes a long time to do personal interviews, but it has probably resulted in a greater understanding and internal validity than an internet-based or similar questionnaire would have resulted in.

5.2 Choice of respondents

To get in touch with relevant respondents in the Taiwanese high-tech industry the most feasible way was to go through Swedish companies with a subsidiary in Taiwan. Going through Swedish companies and not picking just any company in the Taiwanese high-tech industry, made sure that the respondent was actually demanding

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products where there are Swedish suppliers and that the factors needing improvement would be relevant for Swedish suppliers. There are many Swedish companies exporting to Taiwan that do not have a subsidiary in Taiwan. Unfortunately information about who these companies are is not generally available. A list of Swedish companies with a subsidiary in Taiwan from the Swedish Trade Council had to be the starting-point for finding respondents. One month was spent in Taiwan searching for suitable respondents and conducting the interviews. The Swedish subsidiaries were asked to name three of their most important customers and these customers were then asked if they were willing to participate. Because it was suspected that the respondents' level of English would not be good enough, the explanations of the factors in the questionnaire were translated into Chinese. These written explanations needed only to be used on a limited number of occasions because it turned out that their language ability was sufficient.

The choice of respondents could have been done in many ways but in the end it was guided by various factors. Some Swedish subsidiaries were not willing to let us interview their customers and some customers were not willing to participate or did not speak English. The sample could be described as what Bryman (2003) calls a convenience sample, which is one that is simply available to the researcher by virtue of its accessibility. A convenience sample causes problems with generalization compared to a probability sample but it is very common in the field of business and management. Probability sampling involves a lot of preparation so that it is frequently avoided because of the difficulty and costs involved.¹¹⁰

It can, of course, not be claimed that this sample could produce generalizations with statistical certainty about the total population of customers in the Taiwanese high-tech industry. On the other hand there is no reason to believe that the answers from these respondents only hold true for these particular companies. Accordingly, the outcome of this survey should be seen more as indications about the views of the total population rather than proven facts.

Eight customers of Swedish high-tech companies in Taiwan were used as respondents for this research:

- One manufacturer of liquid crystal display panels (LCD-panels). Interview with the senior manager at the Procurement division.
- One semiconductor manufacturer. Interview with the Deputy director of the Production equipment & Materials procurement department.
- One surveillance installation company. Interview with the President.
- One plastic molding company. Interview with the President.

¹¹⁰ Bryman A et al (2003): *Business research methods*, Oxford University press, Gosport, p 105.

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- One biochemical product manufacturer. Interview with the Manager of Production Quality Control.
- Two manufacturers of computers and communication equipments (2C). Interview with the Line director respectively the Director of engineering.
- One manufacturer of computers, communication equipments and consumer electronics (3C). Interview with the Assistant manager at the Strategic procurement department.

For more information about the companies see appendix 9.7.

All companies, except the surveillance installation company, develop their own products. Even though the companies are very different, the factors in the offering selection model should be broad enough to be relevant. Some respondents were asked to relate to what they consider when buying production equipment and others were asked to relate to product components. There were two reasons for this approach; first, a suspicion that there should be differences and asking the respondents just to think about any purchasing decision would have made the data much more difficult to interpret. Second, to serve as a test of the concurrent validity.

Having a predominant representation of companies in the electronic sector in the sample was not a conscious decision. It merely turned out that many of the important customers of the Swedish companies operated in this industry. This should not be seen as a serious bias because the electronics sector also has a predominant representation in the Taiwanese high-tech industry¹¹¹.

Webb (1992) stresses the importance of using respondents that have the necessary data to answer the question. The ability of the respondent to answer will depend upon the degree to which the respondent is informed, the state of the respondent's memory, and the articulateness of the respondent. The respondent also has to be willing/able to answer the questions.¹¹² A suitable person at the Taiwanese customers was in some cases appointed to us by the Swedish subsidiary and in other cases a suitable person was chosen by the Taiwanese customer. In all cases, the respondent seemed to be well informed about how their company make their purchasing decisions and they were able to articulate it well in English. They were willing to answer all questions. However, it is difficult to say if they really had an incentive to tell the whole truth. It could e.g. be possible that the respondents did not admit that they do not consider certain things because they wanted to be politically correct. The respondents should nevertheless have an incentive to tell the truth, because the information could be used to give them better offerings. To be able to get truthful answers when asking which factors needed improvement, it was important to point out that the research was not

¹¹¹ <http://www.amrc.org.hk/4607.htm>, (2005-05-23)

¹¹² Webb J R (1992): *Understanding & Designing Marketing Research*. The Dryden press. Chatham p 94 – 95.

done by request from their supplier and that the company names would be masked in the thesis.

5.3 The interviews

The interviews for this research were performed face-to-face at the respondent's company location in the environment where the purchasing decisions normally takes place. Two interviewers were present at all time during the session to secure that the information was understood correctly. Notes of non-verbal reactions were taken during the time when the respondent filled in the questionnaire to find out if it seemed like the respondents took the questions seriously and if certain questions took longer time to answer than others. The interviews always began with a presentation of the purpose of the research and a proclamation that the research was not performed on behalf of their specific Swedish supplier. The interview took approximately 1½ hour in total, of which 25-40 minutes were used for the questionnaire.

5.4 Cultural issues

The main cross-cultural equivalence problem in this research is between the authors and target audience of this thesis on one hand and the respondents on the other hand. A lack of reliable information about Chinese / Taiwanese culture that could be used to adapt the questionnaire to the national culture meant that an etic approach had to be taken. This meant that the equivalence problems mentioned by Usunier had to be considered. There is a danger that factors like *trustworthiness* or *openness* mean different things in different cultures and the conclusions from the results of the questionnaire could therefore be incorrect. These problems were tackled by examining how the respondent interpreted factors when they were asked to motivate chosen improvement factors. Another way was to give clear written explanation to every factor and making it clear that if they were unsure of how a factor should be interpreted they could ask or consult the Chinese explanation. Asking the respondents' views of the questionnaire, as Usunier recommends, was also a way to see if the questionnaire had made sense to them.

5.5 Analysing the answers

Using Microsoft Excel the factors revealed from the open question "which factors do you consider the most when choosing between different suppliers?" were put together into a ranking list, presenting the most occurring factor as number one and so on. The average scale rating in the questionnaire of each factor was also compiled into a ranking list, presenting the average top rated factor as number one. Weighting those two ranking lists of factors equally, the lists were put together into one final ranking list.

Additionally two lists, ranking the most considered factors when purchasing production equipment and when purchasing product components, were composed for identifying significant differences. Using the same method, the order-winner and qualifier factors revealed from the open questions and from the statements were

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compiled into a ranking list. The occurrence in percent of order-winners, qualifiers, unimportant factors, and the answer that was seen to be not likely to appear, were computed.

Factors revealed from the question considering which factors mentioned that need improvement, were also put together into a ranking list based on the number of times a factor had been ticked. The answers to the open questions, especially the motivations to the factors needing improvement, contained explanations that constituted an important contribution to the analysis beside the quantitative data. Finally, the answers to the open question about the company's common product/supplier selection procedure were gathered and general patterns as well as company specific differences were identified.

6 How to win orders in the Taiwanese high tech industry

In this chapter, the factors that are most considered in the selection process in the Taiwanese high-tech industry, on the basis of the eight respondents, are presented. Further, the factors that need to be improved followed by suggestions of offering selection factors to focus on to win orders in the Taiwanese high tech industry are presented.

6.1 The business purchasing process

Before presenting the decisive offering selection factors and the factors that need to be improved, it is crucial to get insight into the purchasing process i.e. the process wherein the decisions are made.

6.1.1 The purchasing process compared to theory

Figure 5 shows the stages of the Kotlers et al (2000) business purchasing process. Buyers who face a new-task buying situation usually goes through all stages and buyers making modified or straight rebuys may skip some of the stages¹¹³.

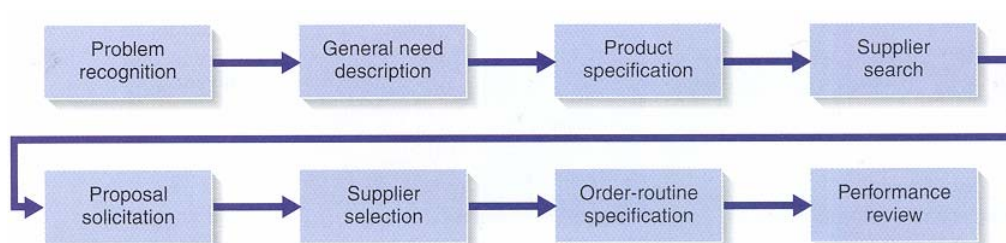


Figure 5: Stages of the business buying process. Kotler P et al (2005).

Though purchasing is complex, it is not a simple process of search, evaluation and ordering; it often does not have a clear beginning and end.¹¹⁴ A business purchase usually involves more decision participants and a more professional purchasing effort. Buying committees made up of technical and top management are common in the decision-making process.¹¹⁵ The cross-functional co-operation between different

¹¹³ Kotler P et al (2005): *Marketing: an introduction* (7th ed), Pearson Prentice Hall, Kendallville, p 172.

¹¹⁴ Ford D et al (2002): *The Business Marketing Course-Managing in Complex Networks*, John Wiley & Sons Ltd, Guildford, p 77-78.

¹¹⁵ Kotler P et al (2005): *Marketing: an introduction* (7th ed), Pearson Prentice Hall, Kendallville, p 167 – 168.

disciplines combining different skills, types of knowledge and expertise, is growing.¹¹⁶ The business buying process also tends to be more formalized, and large business purchases usually call for detailed product specifications, written purchase orders, careful supplier searches, and formal approval¹¹⁷.

Judging from the answers of the respondents, the most common procedure starts with problem recognition, followed by a team of engineers looking into and presenting the technical specifications required. The suppliers' place bids based on the technical specifications. For some of the companies there are very few suppliers to choose from. The 3C manufacturer says that it depends on the classification of the product if there exists only one or several resources, and one of the 2C manufacturer states that there are seldom more than two to three suppliers to choose from. The biochemical company, however, has many suppliers to choose from. The surveillance installation company states that several suppliers worldwide contact them frequently presenting offers, so they do not have to contact suppliers themselves. The semiconductor manufacturer usually purchase from the same supplier as they have done before. The most typical situation for a new supplier to be considered is the occasion of a technical shift, and in many cases when purchasing production equipment the customers' approval is needed before a new supplier can be brought in. This is because a change of equipment may affect the characteristics of the final product.

Kotler et al (2005) argues that during the selection a committee will often draw up a list of the desired supplier attributes and their relative importance, and rate suppliers against these attributes.¹¹⁸ Dobler et al (1996) states that by visiting a supplier's plant or distribution facility, the sourcing team can obtain firsthand information concerning the adequacy of the firm's technological capabilities, manufacturing or distribution capabilities, and its management's technical know-how and orientation.¹¹⁹ The respondents state that there are often an internal meeting with engineers, purchasers and managers present where product and supplier data are discussed and compared, sometimes using a preference list. For further evaluation, some of the interviewed companies pay a visit to the potential supplier and, if it is available, examines the product. When purchasing production machines, the plastic molding company even lets the operators test the machines offered from different suppliers, and take their opinion into consideration.

After negotiations and considerations, the team presents an evaluation report consisting of suggestions and data of two or more alternatives to the management team. The suggested alternative specifications or evaluation reports consists of a number of factors that are taken into consideration. E.g. at one of the 2C

¹¹⁶ Weele van A J (2002): *Purchasing and Supply Chain Management: Analysis, Planning and Practice* (3rd ed), Thomson, Singapore, p 32.

¹¹⁷ Kotler P et al (2005): *Marketing: an introduction* (7th ed), Pearson Prentice Hall, Kendallville, p 167 – 168.

¹¹⁸ Kotler P et al (2005): *Marketing: an introduction* (7th ed), Pearson Prentice Hall, Kendallville, p 167 - 168, 176.

¹¹⁹ Dobler D W and Burt D N. (1996): *Purchasing and supply management* (6th ed), McGraw-Hill, Singapore, p 242.

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manufacturers technical abilities, price, royalty fees etc. are considered. The management team makes the final decision at a closed meeting and the supplier that can offer the most is chosen. The discussions at the closed meeting are often among other things about price. The companies often want to keep the final price as a secret, which is why the engineers are seldom present at this meeting.

The process can according to the biochemical company take one to five months, faster if the reputation of the supplier is good, and three to six months according to the semiconductor manufacturer, at least when purchasing production machines.

The study of the Taiwanese companies provide a picture of the purchasing process containing stages and activities very similar to the ones described in the literature, not suggesting any considerable cultural differences in this matter. The process, however, does not always begin with problem recognition, a formulated specification, and supplier search as described. Sometimes the supplier contacts the potential customer on a regular basis presenting products, making the customers identify their needs and evaluate the products potential for satisfying these needs. This results in a somewhat different purchasing process.

The number of potential suppliers differs, but in general there are quite few that have the technical ability to supply customers in the high technology industries in which the respondents operate. When there are few competing firms, it might mean that the buyer has time for a more detailed evaluation of the competing alternatives before making a decision.

Further more, it appears that the smaller companies also have structured purchasing processes mainly following the stages as described by Kotler et al. However, because the buying committee or team is smaller, resulting in fewer interactions across different departments with separate goals, the process is often faster. Generally, in the smaller companies the top management team or president has a more important role and participates more throughout the whole process, and not just in the end.

6.1.2 Summary

The purpose of this section has been to provide a picture of the business purchasing process in the interviewed Taiwanese companies. The intent is to serve as a starting point for the presentation of the empirical result in the following chapters.

The stages and activities found in the processes appear to be very similar to the ones described in the purchasing- and marketing literature. Though minor variations exist, most often problem recognition is followed by product specification and supplier search, ending with proposals from the suppliers and supplier selection. Even the smaller companies practice a, more or less, structured purchasing process, where the top management team are making a greater contribution all the way through the process.

In these fast moving high technology industries the amount of qualified suppliers are often limited.

6.2 Highly considered offering selection factors

For reasons that will be discussed in chapter 7 "The revised marketing research method", no considerations has been taken to the response given to the questionnaire statements and the open questions concerning order-winners and qualifiers in the following conclusions.

6.2.1 Overall result

The supplier selection (or organizational buying) literature has long held that product quality, delivery, price, and service are the key attributes that are used to assess the performance capabilities of vendors¹²⁰. This study confirms these statements, but in the supplier selection process other factors are also considered, and here several supplier characteristics are pointed out as, if not crucial, very important factors.

The weighted result of the rating scale and the open questions regarding important factors puts the price of offering at first place. On the open question, all respondents mention price as one of the top decisive factors. The price has to be competitive. Other factors, such as that the product seems to fulfil the prescribed technical specifications, are more fundamental and are in most cases required for even to be considered and the price most often serve as the final decisive factor. Two companies, the 3C- and the LCD manufacturer, stated that in order to pay a higher price the other factors, foremost related to the products performance and quality, has to be significantly better for that offering to be chosen. However, as performance are considered as a basic requirement in most cases, the semiconductor manufacturer stated that a product with a poorer performance could be an alternative if the price or total cost is substantially lower than the competitive offerings.

6.2.2 Product factors

Several factors related to the product; reliability, expected physical- and technical life length, safety, percentage of rejection and overall performance, are top rated factors. A number of companies have minimum requirements related to some of these factors, e.g. that the supplier possesses ISO- or other quality certification or that the product is certified to be safe to the user and or environment. These requirements are often a demand from the next in line customer and have to be fulfilled for the offering even to be considered. The remaining product factors are barely considered in the selection process, with a small exception of material. The factor least considered, all categories included in these high technology companies, is product colour.

6.2.3 Service factors

The ability to provide high quality technical support is the highest rated service factor. Generally, in any situation when questions arise related to a purchased product, companies highly value fast and reliable support. One of the two 2C manufacturers interviewed even tests the suppliers' reaction time to questions and for the other 2C manufacturers a satisfying technical support level is even more

¹²⁰ Hill T (2000): *Manufacturing strategy-Text and cases* (2nd ed), Palgrave, Bristol, p 36 - 37.
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important than price. Often, because the suppliers do not have a local office and only agents present, they cannot provide the minimum required level of support. A local agent office is yet often a key factor even to consider foreign suppliers. Good enclosed insurance and product guarantees is another important factor in this category. Maintenance- and repair of product and availability of spare parts, are all quite highly rated, mostly because of these factors high importance to companies purchasing production equipment. In case of a machine break down, fast response is crucial to minimize production loss.

6.2.4 Logistical factors

Delivery reliability, both on time and with right quantity, is by far the most considered logistical factors. However, delivery speed, meaning time from ordering until delivering, is generally not considered that important. But sometimes, if it is really urgent, the offered delivery schedule is crucial and will determine who win the order, according to the 3C manufacturer. On the basis of this, the low rating of the factor logistical information sharing is slightly unexpected. To get hold of regular information about order status and how much the supplier has in store should be a useful tool and of great interest in a strive for increasing logistical control. The factor financial arrangement, concerning the routines of payment, is rated a bit higher. Last, and far down the overall list, is the environmental impact of transportation method factor.

6.2.5 Cost factors

As mentioned earlier, price is the most considered factor all categories. The running cost is yet fairly important, placing cost of updates, maintenance and repair on the upper section of the ranking list. The obvious explanation for this ranking is the factors high correlation with the service factors maintenance- and repair of products. Relationship cost together with organisational- and process change related costs are barely not considered at all, placed at the end of the total ranking list, containing 55 factors.

6.2.6 Supplier characteristics

Top ranked in this category is trustworthiness. As the semiconductor manufacturer stated “everything should be transparent; delivery, communication, technical information, you should be able to rely on everything. If the supplier is playing tricky games with us, it is only time consuming”. The factors openness and need advice ability, the suppliers’ ability to understand customer needs and suggest a solution, is to some extent related to trustworthiness. Advice and suggestion are worthless if they cannot be trusted and this explains these factors relatively similar ranking.

Technical capability for innovation is also considered very important. The semiconductor manufacturer values that the supplier has a technological road map, a clarity of which direction the supplier is heading and what the supplier has capability to do in the future. The surveillance installation company points out the importance of the supplier’s ability to come up with new ideas. They prefer a company with a considerable amount of research and development activities.

A sought-after supplier characteristic is the ability to assist business efficiency, and further slightly down the list is secured supply chain, stable processes, supplier reputation, and local presence. The latter is in line with the high demand for fast support of high quality. The factor least considered in this category of supplier characteristics is personal relations, i.e. that a supplier receives preferential treatment in the selection process because of a close relationship. Another factor rated very low is national home base. This means that it does not appear as if suppliers are discriminated because they originate from certain countries such as Sweden or because they do not have the right personal relations with the customer. A reason for the low rating of these two factors could however be that the respondents wanted to be politically correct by not admitting that an offering can be chosen because of a personal relation or because of the national home base of the supplier.

6.2.7 The most considered factors of all categories

- Price
- Product reliability, On time-delivery
- Support
- Expected physical life length
- Right quantity delivery
- Product safety
- Trustworthiness, Expected technical life length, Percentage of rejection
- Product performance, Technical capability for innovation
- Insurance and guarantees

For the complete list of the weighted results of the rating scale and the open questions regarding important factors, the reader is referred to appendix 9.4.

6.2.8 Purchasing product components vs. production equipment

There exist some differences between factors considered when purchasing product components compared to factors considered when purchasing production equipment. The most significant differences are presented in table 5.

Significant factors	The factor is much more considered when purchasing:	
	Product components	Production equipment
Local presence		X
Information sharing (logistic)	X	
Cost of spare parts		X
Availability of spare parts		X
Aesthetic design - Material	X	
Reputation of brand	X	
Supplier reputation		X
Aesthetic design - Shape	X	
Expected technical life length		X
Financial arrangement (logistic)	X	

Table 5: The most significant differences in factors considered when purchasing product components compare to production equipment.

When purchasing product components, supplier selection is crucial because it often leads to a long-term relationship with frequent purchases. As the purchased products will serve as a component, an integrated part of the purchasing manufacturers own products, the purchased products properties are central. The aesthetic design e.g. is important in order to be able to successfully integrate the component so that the final product fulfils the demands of aesthetic design. When purchasing components, reputation of product brand is valuable. Good reputation of brand is essential when marketing products to customer, e.g., consider the positive consequences of computer manufacturer using Intel's products and mountain bike manufacturer using Shimano's products. This is much less important when purchasing equipment that will be implemented in the companies' own production.

The supplier reputation is, on the other hand, more considered in production equipment purchasing. Once purchased, the company is often dependent on the equipments' performance and the supplier's ability to provide after-sales service and the quality of this service. Production breakdowns have a major negative financial effect and this is the most important reason why performance of purchased equipment, the level of after-sales service and availability of spare parts, are highly considered. In order to get that level of service, it is taken into account whether the

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supplier has local presence or not, implying that local presence is equivalent with fast service and support. The plastic molding company stated that the level of after-sales service is very important, and that it takes often one week for European suppliers to arrive in case of a breakdown, if they do not have a local repair office. Compared with e.g. the Japanese suppliers, who arrive within 2-3 days, this is unacceptable according to the plastic molding company.

A substantial technical life length for production equipment is highly valued. In dynamic high technology industries product generations relieve one another at high speed, while at the same time, making yesterday's production equipment obsolete. Therefore, manufacturers of these kinds of products prefer machines and other equipment that with small modifications can be used for more than one product generation. "Otherwise the investment barely pays off", as the semiconductor manufacturer expressed it.

The logistical factors of financial arrangement and information sharing are much more important to the companies purchasing product components, because of the regular and more frequent purchases. When buying seldom, routines of payment and everyday updated information, concerning e.g. delivery date, is not that crucial. A five day delayed machine every other year, may not have the same consequence as a one-day delayed product component every other week.

6.2.9 Summary

Price and running costs, factors related to the product, e.g. reliability, life length, safety and overall performance together with logistical factors such as delivery on time and with the right quantity and service such as support are the most considered factors when making purchasing decisions. Some minimum requirements related to the product e.g. ISO-certification, are often a demand from the next in line customer and have to be fulfilled for the offering even to be considered.

However, in the supplier selection process supplier characteristics factors are also considered, where trustworthiness and technical capability for innovation, are the most essential factors. A customer should be able to rely on the supplier regarding delivery, technical information and so on. It is important that the supplier has an ability to come up with new ideas, a technical road map and a clarification of its future abilities. The factor least considered among the supplier characteristics is personal relations.

There exist some differences between factors considered when purchasing product components comparing to factors considered when purchasing production equipment. Mostly, these factors are related to the difference in purchase frequency and different service needs. When purchasing often, logistical factors such as information sharing and financial arrangement becomes more important. Further more, when purchasing production equipment, technical life length, cost, and availability of spare parts and the presumed condition for that, local presence, are more considered. When purchasing components that will constitute a part of the next in line customer product, the reputation of brand, colour and shape is more of interest.

6.3 Offering selection factors needing improvement

6.3.1 Overall result

Considering what is available in the market today, the eight respondents were asked to designate the offering selection factors that they would like to see improvement in. According to them, there are factors related to all categories, cost excluded, that need to be improved, where ability to be flexible, together with product performance and support are the top rated factors.

6.3.2 Product factors

Product performance and reliability is highly critical and need continuous quality improvements. This is clearly connected to the nature of the high competitive industry and the market's high demand. One 2C manufacturer sometimes experiences that product components deviations are below the acceptable level. The surveillance installation company, adding that the percentage rejection is barely acceptable today, shares this view. In addition, purchased production equipment breaks down too often. The semiconductor manufacturer states that; "as the business is very capital intensive, production equipment utilization must be maximized and the products need continuous improvements to increase the yields". Therefore, substantial technical life length is highly valued and needs to be enhanced.

6.3.3 Service factors

As level of support is one of the top ranking factors on the list of the most considered factors when making purchasing decisions, it is also one of the top "need improvement" factors. The Plastic molding company argues that the support of today is not fast enough, which often correlates with the absence of local presence. But even with local presence the support is sometimes not good enough. When technical problems arise the local office often cannot solve the problem, and headquarter has to be contacted, which can be difficult because of the time differences. Getting answers to questions can therefore take substantial time, giving the customer a feeling of not being prioritized, one 2C manufacturer says. A few respondents have however, pointed at the differences between business cultures, especially related to working hours, as a larger problem than time differences when it comes to response time. According to the respondents there are generally longer working hours in Asia and Taiwan than in Europe.

The surveillance installation company thinks that often when there is a problem no one will take responsibility for it, and sometimes the problem never gets to be solved; "it falls between chairs". The LCD manufacturer states that competent technical support has to be in place in the country to provide the essential support. Some suppliers have local support, but the quality is poor, the amount of staff is too small or not competent enough to solve the technical problems. The local representatives should also take more initiatives and visit their customers more often, not only when it is asked for and they should generally show more interest in the customers and their business. According to the surveillance installation company the performed visits appears unorganized and without an agenda. Mcquarrie (1991) states that lack of

organisation is a typically problem with customer visit activity; unclear objectives, mixed agendas, lack of a discussion guide, and ineffective reporting are commonly observed.¹²¹ This lack limits the possibilities of receiving valuable information about the customers needs and does not contribute to the customers' confidence in the supplier.

The absence of local presence, which could means limited availability of technicians and spare parts, also affects the ability to provide maintenance service. This ability would several respondents like to see improvement in.

6.3.4 Logistical factors

Most of the interviewed companies do not have adequate insight in their suppliers' supply chain, and would prefer to receive information regarding the suppliers' suppliers. They want the supply chain to be more secured than today, i.e. that the suppliers can ensure them delivery. If the market is suddenly booming, it is crucial that the supplier has capacity to deliver. A basic condition for that is that the supplier's suppliers have enough resources to make a delivery.

Other logistical factors that need improvement are delivery reliability and speed. According to the plastic molding company the deliveries are often late, which affect business a great deal. Product life cycles are getting shorter and shorter and there is no room for problems in this area. The lead times can be 3 to 7 months, which sometimes is longer than our products life cycles, the semiconductor manufacturer states. Also, in case of emergency or other special occasions, there should be special and faster delivery routines, particularly if it is the supplier who has failed in some way. According to the 3C manufacturer, suppliers sometimes break their promises about delivery speed and date. Sometimes suppliers make promises just to get the order. They do not have the possibility to deliver as fast as they claim, and they know it. This statement points in the direction of a desire for increased supplier trustworthiness. This kind of short-term profit strategy of the supplier is not leading to a long-term relationship with the customer. Most often, unpredictable occurrences in the suppliers' internal processes cause delays, making customers want increased information sharing. It would be preferable to get logistical information without asking for it and even access to the suppliers' storage database, one 2C manufacturer states.

6.3.5 Supplier characteristics

Several of the mentioned factors above are related to the absence of, or poor, local presence, even so in this category. The possibility of performing more frequent customer visits could improve the suppliers' ability to assist business efficiency, an ability that needs improvement according to three of the respondents. All processes and business transactions can be more efficient, and it would be preferable if the supplier had more ability to find and come up with better solutions for the processes and give technical advice, the 3C-, the LCD-, and the semiconductor manufacturer

¹²¹ Mcquarrie E F (1991): *The customer visit: Qualitative research for business-to-business marketers*, Marketing research, March 01.

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informs. The suppliers' ability, or willingness, to help their customers in this matter is not good enough today. Also, frequent visits showing interest in the customers' business is beneficial for the relation and consequently for the suppliers' business.

As several factors related to the product are not satisfying, according to several respondents, neither are the suppliers' commitments to make improvements related to products, services and logistics. However, when analysing given facts i.e. looking into the component purchasers' motivations in this question, it turns out that some respondents have misunderstood and made wrong interpretation about the true meaning of the factor. The "degree to which the supplier is committed to continually improve..." obviously have been interpreted as "to what extent the supplier can be trusted when making promises about to improve..." or "to what extent the supplier considers customer suggestions to improvement..." Facing this, the result and the degree of validity of the high ranking of this factor cannot be verified, and further, suggests that the factor trustworthiness needs more improvement than rated. Nevertheless the respondents' motivations are of interest; it takes too long for the supplier to improve what they have promised, or they do not even have the time to take suggestions into considerations. Sometimes the suppliers break their promises regarding changes, not performing them at all.

According to seven out of eight respondents, the suppliers' ability to be flexible needs to be improved. The importance of this factor is strongly related to the characteristics and nature of the high tech industry. The 3C manufacturer states that the industry is not traditional and mature, it is fast going, and a lot of unexpected things happen. Both demand and technology changes rapidly, and the supplier has to be flexible regarding everything in order to make it all work out. The president of the surveillance installation company thinks some supplier policies and routines are too rigid and procedures too lengthy, which reduces the suppliers ability to be flexible.

Good technical capability for innovation is desirable, and could be better. The 3C manufacturer thinks that because it is a fast moving industry, the suppliers should be even better at coming up with and offer new solutions/products and help customers improve their products. The plastic molding company states that the Japanese companies are much faster to come up with products and solutions than the European companies, and is of the opinion that "the poor local presence maybe leads to that they won't feel what the market needs or wants". This also reflects the suppliers' inferior ability to assist business efficiency, as mentioned earlier.

The rather poor support is occasionally related to the suppliers' lack of communication ability, resulting in failure to understand customer needs. This is not related to language skills but to the essential ability to and experience of presenting and communicating technical details. Also, when dealing with production equipment, the purchased product can sometimes be used in several applications, making it more difficult for the supplier to fully understand the customer's problems and needs in every single case.

6.3.6 Factors that need the most improvement

- Ability to be flexible, Product performance, Support
- Maintenance of product, Product reliability, Secured supply chain
- Commitment to improvement, Delivery reliability and speed, Information sharing
- Local presence
- Ability to assist business efficiency, Availability of spare parts, Expected technical life length, Percentage of rejection, Technical capability for innovation, Updates of product.

For the complete list of the ranked factors that need improvement, the reader is referred to appendix 9.5.

6.3.7 Purchasing product components vs. production equipment

There exist some differences between factors that need improvement depending on if product components or production equipment are purchased. The most significant differences are presented in table 6.

Significant factors	The factor needs more improvement when purchasing:	
	Product components	Production equipment
Delivery reliability		X
Percentage of rejection	X	
Ability to assist business efficiency		X
Commitment to improvement	X	
Technical capability for innovation		X
Expected technical life length		X
Information sharing (logistic)	X	

Table 6: The most significant differences in factors that need improvement depending on if product components or production equipment are purchased.

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Even though delivery reliability is considered more when purchasing product components, the suppliers' performance in this area is acceptable according to the respondents, but need to be improved when purchasing production equipment.

Because it is preferable that production equipment last more than one product generation, technical life length is considered more in the offering selection process when purchasing equipments. This study indicates though, that the offerings of the suppliers today in this area is not satisfying in general. Related to the technical life length is the demand for the supplier to have an increased technical capability for innovation. The technical capability is in a way a condition for succeeding in developing equipment with e.g. long technical life length. On the base of this discussion, it seems a bit paradoxical that it is foremost the component purchasers that eager for improved supplier commitment to product- and process improvements. But, as stated earlier in this chapter, the validity of this factor can be questioned, and therefore the reader should not attach a great importance to this supposed paradox.

When purchasing product components a high level of logistic information sharing is highly appreciated, but today it is not reaching the desired level. As mentioned before, when making more frequent purchases, the knowledge regarding logistics and getting continuous information about delivery status becomes more important.

On the basis of the significant difference in need improvement regarding the factor percentage of rejection it is easy to conclude that the production equipment generally has better quality than product components or that the factor is more important for buyers of product components. Then again, it is important to remember that the volume is much bigger when purchasing components, and therefore the real percentage of rejection may not be higher.

6.3.8 Summary

When considering what is available in the market today, there are factors related to all value providing factor categories that many respondents want to see improvement in. Improvement in product performance and reliability, service related factors such as level of support and maintenance of product, and logistical factors such as delivery reliability, speed and information sharing, would be highly valued. Furthermore, ability to be flexible, level of secured supply chain, and level of local presence are a sample of the highest ranked supplier characteristic factors that are not fully satisfying today.

Some significant differences exist between factors that need improvement depending on if product components or production equipment are purchased. When purchasing components the percentage of rejection and sharing of logistical information need the most improvement. When purchasing production equipment, delivery reliability and technical life length, together with the supplier characteristic factors, technical ability for innovation and ability to assist business efficiency requires improvement.

6.4 Conclusions

Many factors need to be taken into consideration when trying to win orders and become a supplier of the Taiwanese high-tech industry. Although the aim of this thesis is helping Swedish companies with knowledge-intensive offerings wanting to win orders in the Taiwanese high-tech industry, no suggestion made in this thesis can be claimed to only be relevant for Swedish companies. The suggestions are probably applicable to companies from other countries in the same situation. The suggestions might however be at least relevant for Swedish companies, because all the interviewed customers are today customers of Swedish companies. The following suggestions can be made:

- Although price is ranked as the top factor considered in the offering selection process, it is important not to suppose that a low price strategy is the key factor in these types of industries. Even to be considered other factors, e.g. technical specifications and overall performance and quality, must of course attain a certain minimum level. Thus, the price is always put in relation to those factors, and it even appears that price is not always the most decisive factor when products are comparable. Which factor that is considered the most, can vary from time to time. The 3C manufacturer e.g. argues that quality, cost, delivery and service (QCDS) is always considered, but the priority and weights between the four factors depends on the requirements in the specific situation. Price is a cost factor and not a value-providing factor as defined in the offering selection model. This means that if a greater value is achieved through the value-providing factors then this could motivate a higher price. However, the study shows that the difference in value has to be significant to motivate a higher price. A low price strategy might seldom be the best way for Swedish companies to compete considering the high production costs in Sweden. This is why a strategy for providing high-value has to be chosen.
- The study has shown that many companies have very few alternative suppliers to choose from when needing to source specific production equipment and product components. This means that a lot of bargaining power might lie in the hands of the suppliers. It is important to understand the structure of the market to decide on e.g. appropriate pricing strategies. That there are few competing suppliers suggests an absence of rigid qualifying factors because often there is time for the customer to evaluate all suppliers. Many of the companies in the study point out that when there are few suppliers that can solve their problem they evaluate all of them. Evaluations for 3-6 months are often common.
- Many of the most considered factors are related to the actual offering and not to the supplier characteristics. The conclusion of this could be that optimizing the offering is actually the most important activity for winning orders. However some supplier characteristics are also very important. The top-rated supplier characteristic is trustworthiness. To demonstrate trustworthiness is

therefore important because otherwise a very attractive offering might be seen as an offering that will not be fulfilled. Some value providing factors like expected physical life length and need advice ability are factors where the customer is dependent on the trustworthiness of the supplier. This is because there is sometimes no easy way for the customer to verify what the supplier is claiming. If such factors are used as a differentiating factor to win orders, then it is especially important to demonstrate trustworthiness. A way to reduce the need for trustworthiness is to offer insurance and guarantees where certain promises are put in writing. Insurance and guarantees is also a factor that is quite highly considered by the respondents.

- It is important to carefully consider the appropriate level of local presence. The most appropriate level of local presence depends on the needs of the customers. A low level of local presence might affect the quality of support and the supplier's ability to understand the customer. This study points out that having a local office is not enough. It could actually be a liability to have a local office that promises more than it can deliver if the customer has to go through the local office all the time when it is actually only the head office that can solve the customer's problem. Local presence is something that is considered very much in the selection process by many of respondents, but it seems to be especially important when purchasing production equipment. It is not the level of local presence that is important per se but the values that come out of it, and many of these values might be more important to those companies purchasing production equipment. Availability of spare parts is e.g. more important to companies purchasing production equipment and this is something that could be easier to achieve with a greater local presence.
- Several factors that need improvement are those that are highly considered when making purchasing decisions. These factors are product-, and delivery reliability, technical life length, product performance, percentage of rejection, support and technical capability for innovation. These are the factors that are crucial for outperforming the competitors. Many of them require an ability to utilize technical knowledge to enhance the product. That the suppliers technical capability for innovation is one of these important factors, shows that the customers are not only interested in what the supplier can offer today. It is highly considered that the supplier has a technological road map for future releases, as one of the respondents expressed it. High innovation capability is therefore one of the factors that Swedish companies have to focus on.
- Factors that are not considered that much in the supplier selection process but needs to be improved are factors that could be used to provide a competitive edge. These factors are the ability to be flexible, secured supply chain, delivery speed, logistical information sharing and local presence. Because the factors are not considered that much but needs to be improved, it is important to promote these factors in negotiations and to emphasise a difference from the competitors. Ability to be flexible seems to be the most important of these

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factors. Being flexible can mean different things for different customers, thus it is important to demonstrate an ability to be flexible regarding relevant factors for the customer at hand. Some respondents in this study referred flexibility to delivery, others to being able to meet unique product specifications.

- Factors that are highly considered in the selection process but do not need to be improved could be seen as factors where it is needed to match the competitors. It is however unlikely that superior performance in these factors will win orders because these factors are not required to be improved. Two factors with this characteristic is expected physical life length and product safety. The advice is thus to treat these factors as qualifiers.

7 The revised marketing research method

By carrying out the interviews, important insights about the model and the method's validity have been made. In this chapter the result of the validations attempts and the implemented modifications are presented.

7.1 The validity

Does the developed marketing research method serve its purpose as a business-to-business marketing research method for surveying offering selection factors that works for knowledge-intensive offerings and in international environments? Does the method really measure what it is supposed to measure and do the factors surveyed cover the most important offering selection factors? On the basis of the interviews, the validity and comprehensiveness of the method has been confirmed to some extent and refuted to some. In the following sections each component of the method are discussed and evaluated.

7.1.1 The validity of the factors and the scale

During the interviews, besides on the basis of direct questions, an exceptionally low level of suggested changes in factors included in the questionnaire from the respondents has been experienced. The factors in the questionnaire were generally viewed as comprehensive. Only one respondent suggested one factor to be added. This is the foremost sign of the comprehensiveness of the factors in the questionnaire. However, it is possible that the respondents may have been reluctant to express their true views.

Every factor initially mentioned by the respondents as considered in the selection process, could be found in the questionnaire. Further, very few factors were ticked as "not applicable" in total when rating the factors' influence on the selection decision, and none of the factors by every respondent, which indicates that the factors are relevant in the survey.

As stated earlier, the existence of differences in answers from groups that are known to differ confirms concurrent validity¹²². Considering separate factors, differences in some of the answers between purchasers of production equipment and product components were initially expected. Many of those expectations were confirmed, which indicates that the factors made sense i.e. were not misinterpreted, and can be used to extract the required information in different segments and purchase situations.

¹²² Bryman A et al (2003): *Business research methods*, Oxford University press, Gosport, p 75 - 79.

Other contribution to the verification of the correctness in respondents' interpretation of factors exists. There is a high correlation (0.91) between mentioned factors as a response to the open question about which factors they consider the most, and the corresponding factor rating of 4 or 5 in the questionnaire. Further information about the interpretation was given by the respondents' motivations of chosen improvement factors. The motivations provided a clear picture of the respondents understanding, which resulted in that 4.8 %¹²³ of the total factors mentioned were experienced to be misinterpreted to some extension.

The reason for giving the possibility to chose "not applicable" when rating the supplier characteristic factors was to test if the respondent understood the true meaning of the question and if the factors made sense to them. It is obvious that any factor related to the characteristics of the supplier is in some way applicable regardless of context and type of product being purchased. Every supplier has e.g. an "owner" and a "reputation"; the question is how much these factors are considered in the selection process. The result of the test is that only one of the respondents at one occasion chose the alternative "not applicable", which appeared when asked to rate the factor "supplier culture and values".

7.1.2 The validity of the order-winner and qualifier statements

The purpose of the statements in the questionnaire was to divide the factors in groups of order-winners and qualifiers. Some of the answers to the statements appeared to be illogical, and therefore useless. This is probably due to misinterpretations of the statements. One respondent answered systematically illogical, i.e. constantly ticking the alternative that was thought to be not likely to appear. Further, the statements resulted in very few qualifiers, which also points in the direction that the statements can be misinterpreted. In addition, the answers were generally widely differing across the respondents, even the answers of similar companies like the two 2C manufacturers. This authenticates suspicions of a bad validity of the statements. The answers to the statements were analyzed but on the basis of the previous discussion, excluded from the conclusion about decisive offering selection factors and from the revised questionnaire. The open questions, intended to complement the statements cannot alone constitute a solid ground for making conclusions about order-winners and qualifiers. These open questions were therefore not used to distinguish order-winners from qualifiers in this study. Because these questions provide more depth to the interview, they will sustain as originally designed in the revised marketing research method even if the statements have been excluded.

The result of the statements is that approximately 70 % of the factors are considered as order-winners, which is not a higher percentage than Hill (2000) presents as

¹²³ 8 respondents ticked 13 need improvement-factors each = 104 occasions. In 5 of these occasions, the respondent motivation of the answer showed that the factor was to some extent misinterpreted, which gives $(5/104) = 4,8\%$ misinterpretation. Of the 55 factors considered, 38 were ticked as needing to be improved and 4 of those were shown to be misinterpreted to some extent.

possible in various studies.¹²⁴ However, Hill (2000) examines 10 factors maximum in relation to this study's 55 factors, leading to 7 order-winners instead of 39. With that number of winners the concept of order-winners and qualifiers is not quite manageable and useful. Also, examining only 10 factors, gives the opportunity to present all factors at once for the respondent, who gets an overview and can consider all facts in relation to each other, which is not possible with many factors. So, it seems like the concept of order-winners and qualifiers are only applicable when using a small number of factors for examination. However, as stated earlier, to avoid different interpretations of which dimension of a factor that is the most critical to the business, it is important to divide each factor into sub-factors for examination¹²⁵. If not, essential insights will be hidden, limiting the possibility to develop a successful strategy, which in turn limits the usefulness of the concepts of order-winner and qualifier.

7.1.3 The validity of the need improvement-questions

As mentioned, the improvement questions were followed by a request for motivation of the stated factors. Those motivations gave clear insights into the respondents' interpretation of the question asked, and as a result, all the respondents were found giving answers in line with the purpose of the question.

The initial part of the interview did not, however, contain any open questions connected to, and intended to complement, the fixed questionnaire questions about improvement requests. This lack of opportunity to freely express and discuss improvement factors before being introduced and influenced by proposed factors should be considered as a non-optimal approach.

7.2 Revisions

7.2.1 Factor and scale revision

- The “not applicable-test” in the supplier characteristics category, were invented only as a contribution to the verification of the questionnaire. As the purpose of the test is fulfilled, this alternative choice is eliminated from the category in the revised version of the questionnaire.
- None of the factors were ticked “not applicable” by all the respondents, which motivates keeping all evaluated factors in the revised questionnaire. Further, no reason for making changes in the present order of the factors in the revised questionnaire has been found. However, on the basis of our experience, some other modifications regarding the factors has to be done:
 - The explanation of the factor “Commitment to improvement” is changed from “The degree to which the supplier is committed to

¹²⁴ Hill T (2000): *Manufacturing strategy-Text and cases* (2nd ed), Palgrave, Bristol , 2 ed, p 39 - 40.

¹²⁵ Hill T (2000): *Manufacturing strategy-Text and cases* (2nd ed), Palgrave, Bristol , 2 ed, p 36 - 37.

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continually improve its products and processes” to “The degree to which the supplier continually improve...”. This is done in order to increase the comprehension of the factor.

- The factor “Local presence” is changed to “Level of local presence” and the explanation is changed from “That the supplier has a local office in the country where your company is located” to “The extent to which the supplier has activities in the country...”. Many of the respondents expressed the importance of good support and that the local presence had to be improved. In most cases it is not, however, a matter of if the supplier is present or not, but the level of local presence.
- The supplier characteristics factor “Market share of the supplier” is added. The semiconductor manufacturer usually considers this factor. Since a certain market structure amongst the supplier might be more favourable to the semiconductor manufacturer, they have to consider how their decision will impact the suppliers’ market share. Usually, supplier decisions made by the company heavily impacts the market i.e. their company size.
- The supplier characteristics factor “Length of relationship – that your company have had a long relationship with the supplier” is added. Hill (2000) states that where a company is an existing supplier, it may continue to win orders in part, or solely, because of this factor. The criterion tends to be relevant to both low-volume and spares markets.¹²⁶

The revised questionnaire containing the modifications discussed is presented in appendix 9.3.

7.2.2 Order-winner and qualifier statements revision

Because it seems like determining order-winners and qualifiers using statements is not an optimal approach, judging from the outcome of this research, a proposal for a different approach is presented. Leaving the concept of statements and shifting towards questions preceded by Hill’s definition¹²⁷ of order-winners and qualifiers could possibly give more useful data. Hill does not, however, consider the possible situation that a proposed factor could be experienced as a non-important factor. Not giving the possibility to set a factor neither winner nor qualifier, may put the respondent in the situation where the respondent are merely forced to categorize the factor incorrectly. The consequence is unreliable data, not providing the correct picture. Hence, in order to establish and separate the factors considered and not

¹²⁶ Hill T (2000): *Manufacturing strategy-Text and cases* (2nd ed), Palgrave, Bristol , 2 ed, p 77.

¹²⁷ Hill T (2000): *Manufacturing strategy-Text and cases* (2nd ed), Palgrave, Bristol , 2 ed, p 37.

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considered in the offering selection process, a predetermined alternative answer to the question is added. The proposed question design, which has not been tested, is the following:

Example:

Order-winners are those criteria that win the order.

Qualifiers are those criteria that a company **must meet** for a customer to even consider it as a possible supplier. These criteria do not win orders.

Irrelevant factors do not affect the offering selection at all.

	Qualifier	Order-winner	Irrelevant factor
<i>Product performance</i> is.....	[]	[]	[]

7.2.3 Open questions revision

To give the opportunity to freely express and discuss improvement factors before influenced by proposed factors, open questions concerning this matter are added. This approach will increase the possibility of receiving relevant data in this area.

In general, resulting questions are added to the existing questions. Though often answers to those resulting questions are given in the answer of the existing questions, the resulting questions are added, as a check to secure that the substance of the information received from the respondents is equivalent. This will insure comparable data when performing the marketing research.

The final form of open questions containing the modifications discussed is presented in appendix 9.2.

7.3 Conclusions

The experience from interviewing and analyzing the answers from the Taiwanese high-tech companies and the discussion in this chapter advises the authors to be positive about methods ability to produce valid results. It seems like the method can be used for knowledge-intensive offerings and in international environments. It also gives the impression that the method can be used in diverse segments or industries. This is because a small amount of "not applicable" was ticked and still most of the interviewed companies operate in different segments of the high tech industry. This indicates that the offering selection factors in the model are relevant for examination in this type of industry. The method has however only been tested in the Taiwanese high-tech industry and this could have distorted the results from the validation.

7.4 Summary

On the basis of the performed interviews the method is verified and could be considered to serve its purpose. In various ways the validity of factors, the questionnaire design, and the open questions can be considered as convincingly satisfying. The statements, however, which were intended to divide factors into order-winners and qualifiers, did not fulfil its purpose and is excluded in the final version. A rather different approach to conclude this is suggested but not tested.

Apart from this, some other modifications have been found necessary to implement. Two supplier characteristic factors “Length of relationship” and “Market share of the supplier” are introduced, and one adjustment regarding the explanation of a factor has been done. Regarding the open questions, resulting questions are added, as an insurance that the substance of the information received from different respondents is equivalent. Also, open questions concerning requested factor improvements are added.

8 References

Literature

- Andersson B-E (1994): *Som man svara får man svar* (2nd ed), Rabén Prisma, Kristianstad.
- Bryman A et al (2003): *Business research methods*, Oxford University press, Gosport.
- Dahmström K (2000): *Från datainsamling till rapport- att göra en statistisk undersökning* (3rd ed), Studentlitteratur, Lund.
- Dobler D W, Burt D N. (1996): *Purchasing and supply management* (6th ed), McGraw-Hill, Singapore.
- Douglas S, Craig S: (1983): *International Marketing Research*, Prentice Hall, Englewood Cliffs.
- Ford D et al (2002): *The Business Marketing Course-Managing in Complex Networks*, John Wiley & Sons Ltd, Guildford.
- Furusten S (1996): *Den populära managementkulturen*, Nerenius & Santerus Förlag AB, Falun.
- Gibbons M et al (1994): *The new production of knowledge*, Sage, London.
- Hill T (2000): *Manufacturing strategy-Text and cases* (2nd ed), Palgrave, Bristol.
- Holme I M, Solvang B K (1997): *Forskningsmetodik* (2nd ed), Studentlitteratur, Lund.
- Kotler P et al (2005): *Marketing: an introduction* (7th ed), Pearson Prentice Hall, Kendallville.
- Lawrence W (2000): *Social Research Methods, Qualitative and Quantitative Approaches*, Pearson Education.
- Schilling G (1998): *Deflation*, Lakeview Publishing, Short Hills.
- Usunier J-C (2000): *Marketing Across Cultures* (3rd ed), Prentice Hall Europe, Singapore.
- Webb J R (1992): *Understanding & Designing Marketing Research*. The Dryden press. Chatham.
- Weele van A J (2002): *Purchasing and Supply Chain Management: Analysis, Planning and Practice* (3rd ed), Thomson, Singapore.

Articles and reports

Cavusgil T, Godiwalla Y (1982): *Decision-making for international marketing: A comparative review*, Management Decision, vol 20.

Daft et al (1987): *Message Equivocality, Media Selection and Manager performance: Implications for information system*, MIS Quarterly (September).

Glesbygdverket (1997): *Åtgärdsprogram för kunskapsintensiv production i gles- och landsbygd*.

Maruyama M: (1990): *International meta-marketing*, Human Systems Management, vol 9.

Mcquarrie E F (1991): *The customer visit: Qualitative research for business-to-business marketers*, Marketing research, March 01.

Statistical publications

Data provided by Han-Chuan Cheng at Taiwan Economic Data Center, (2005-02-01)

Directorate General of Budget, Accounting and Statistics: (2004): *Statistical Yearbook of The Republic of China 2004*, Directorate General of Budget, Accounting and Statistics, Taipei.

Interviews

Director of engineering, Computers and communication equipment manufacturer, Taipei, (2005-03-08)

Assistant manager strategic procurement department, Computers, communication equipments and consumer electronics manufacturer, Taipei, (2005-03-09)

Senior manager at procurement division, Liquid crystal display panels manufacturer, Hsinchu, (2005-03-10)

President, Surveillance installation company, Taipei, (2005-03-14)

Line director, Computers and communication equipment manufacturer, Taipei, (2005-03-14)

Deputy director production equipment & materials procurement department, Semiconductor manufacturer, Hsinchu, (2005-03-15)

President, Plastic molding company, Taipei, (2005-03-16)

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Manager of Production Quality Control, Biochemical product manufacturer, Taipei, (2005-03-18)

Electronic sources

<http://www.answers.com/topic/asian-financial-crisis?method=8>, (2005-04-08)

<http://www.amrc.org.hk/4607.htm>, (2005-05-23)

<http://www.elin.lub.lu.se>, (2005-02-01)

http://eng.stat.gov.tw/public/data/dgbas03/bs4/nis_e/EP2.xls, (2005-03-24)

http://europa.eu.int/comm/external_relations/china/summit_1204/ip04_1440.htm, (2005-04-13)

http://en.wikipedia.org/wiki/Internal_validity, (2005-04-28)

http://www.iie.com/publications/chapters_preview/383/3iie3675.pdf, (2005-04-08)

<http://www.imf.org>, (2005-04-13)

<http://www.ivawebb.se/produktion/download/rapporter>, (2005-04-20)

<http://www.ivawebb.se/produktion/download/rapporter/Framtida%20Produktion.pdf>, (2005-04-20)

<http://www.scb.se>, 2005-03-27, (2005-05-28)

http://www.swedenabroad.com/pages/general____8848.asp, (2005-04-12)

<http://www.swedishtrade.se>, (2005-04-12,13,14)

<http://www.trade.gov.tw>, (2005-04-02)

<http://www.wes.org/ewenr/02nov/Practical.htm>, (2005-04-15)

Articles and literature that served as an inspiration for the offering selection model

Ford D. et al (2002): *The Business Marketing Course-Managing in Complex Networks*, John Wiley & Sons Ltd, Guildford.

Kannan V. R., Tan K. C. (2002): *Supplier Selection and Assessment: Their Impact on Business Performance*, The Journal of Supply Chain Management, Fall edition.

Kotler P. et al (2005): *Marketing: an introduction* (7th ed), Pearson Prentice Hall, Kendallville.

Muralidharan C. et al (2002): *A Multi-Criteria Group Decisionmaking Model for Supplier Rating*, The Journal of Supply Chain Management, Fall edition.

Weele van A J (2002): *Purchasing and Supply Chain Management: Analysis, Planning and Practice* (3rd ed), Thomson, Singapore.

9 Appendix

9.1 The original open questions

Initial questions

1. What is your company's common procedure when choosing between offerings from different suppliers?
2. What are the minimum requirements even to consider an offering, i.e. which factors are the qualifying factors? It could be related to the offering or to the supplier characteristics.
3. Which factors do you consider the most when choosing between offerings from different suppliers? What are the reasons?
4. What determines which offering you choose?

Finishing questions

5. Could you please motivate the factors that you think should be improved (in the questionnaire)?
6. Besides the factors suggested/mentioned in this questionnaire, is there anything else (other factors) you consider when choosing between offerings from different suppliers?
7. Is there anything you wish to add regarding your offering selection process?
8. What is your opinion of the questionnaire?

9.2 The revised open questions

Initial questions

1. What is your position in the company?
2. What is your company's common procedure when choosing between offerings from different suppliers?
 - 2.1. Who participates in the process?
 - 2.2. How long is the process from initiation to selected offering?
3. What are the minimum requirements even to consider an offering, i.e. which factors are the qualifying factors? It could be related to the offering or to the supplier characteristics.
 - 3.1. Could you please motivate your answer?
4. Which factors do you consider the most when choosing between offerings from different suppliers?
 - 4.1. Could you please motivate your answer?
5. What determines which offering you choose?
 - 5.1. Could you please motivate your answer?
6. Of all factors related to an offering and supplier characteristics, which factors need to be improved?
 - 6.1. Could you please motivate your answer?

Finishing questions

7. Could you please motivate the factors that you think that should be improved (in the questionnaire)?
 - 7.1. In which way are those factors not satisfying today?
 - 7.2. Do you have any suggestions of improvement?
8. Besides the factors suggested/mentioned in this questionnaire, is there anything else (other factors) you consider when choosing between offerings from different suppliers?
9. Is there anything you wish to add regarding your offering selection process?

10. What is your opinion of the questionnaire?

10.1. How could it be improved?

9.3 The revised marketing research questionnaire

The following questions concern different factors related to purchasing decisions. Because this is a standardized questionnaire some factors might not be applicable to the products that your company are purchasing.

Please answer the questions by circling one of the figures from 1 to 5 or N/A:

1 = Not at all

2 = A little

3 = Quite much

4 = Much

5 = Very much

N/A = the factor is in my opinion not applicable for this specific group of products.

If something is unclear, please do not hesitate to ask.

A:1

How much does your company consider the following factors **concerning the product** when choosing between offerings from different suppliers?

	Not at all		Quite much		Very much	N/A
<i>Aesthetic design</i>						
Colour	1	2	3	4	5	[]
Material	1	2	3	4	5	[]
Shape	1	2	3	4	5	[]

	Not at all		Quite much		Very much	N/A
<i>Environmental impact</i>	1	2	3	4	5	[]
<i>(That the product is not harmful to the environment)</i>						

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	Not at all		Quite much		Very much	N/A
<i>Expected physical life length</i>	1	2	3	4	5	[]
(Time before the product will have to be replaced)						
	Not at all		Quite much		Very much	N/A
<i>Expected technical life length</i>	1	2	3	4	5	[]
(Time before the technology that the product is based on becomes out-dated)						
	Not at all		Quite much		Very much	N/A
<i>Percentage of rejection</i>	1	2	3	4	5	[]
(Proportion of received products below quality standards)						
	Not at all		Quite much		Very much	N/A
<i>Product diversity</i>	1	2	3	4	5	[]
(That the product can be used for several and different purposes)						
	Not at all		Quite much		Very much	N/A
<i>Product performance</i>	1	2	3	4	5	[]
(Precision, deviation from ideal value, how well the product performs its main function)						
	Not at all		Quite much		Very much	N/A
<i>Product safety</i>	1	2	3	4	5	[]
(Safe to use)						

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	Not at all	2	Quite much	4	Very much	N/A
<i>Product reliability</i>	1	2	3	4	5	[]
<i>(How often the product breaks down and has to be repaired)</i>						

	Not at all	2	Quite much	4	Very much	N/A
<i>Reputation of brand</i>	1	2	3	4	5	[]

A:2

Considering what is available in the market today, please mark **three** of the factors below that you would like to see improvement in?

- | | |
|---------------------------------------|--------------------------------------|
| <i>Aesthetic design - Colour</i> | <i>Product diversity</i> |
| <i>Aesthetic design - Material</i> | <i>Product performance</i> |
| <i>Aesthetic design - Shape</i> | <i>Product safety</i> |
| <i>Product reliability</i> | <i>Reputation of brand</i> |
| <i>Environmental impact</i> | <i>Expected physical life length</i> |
| <i>Expected technical life length</i> | <i>Percentage of rejection</i> |

B:1

How much does your company consider the following *services provided with the product* when choosing between offerings from different suppliers?

	Not at all		Quite much		Very much	N/A
<i>Availability of spare parts</i>	1	2	3	4	5	[]

	Not at all		Quite much		Very much	N/A
<i>Financial arrangements</i>						
<i>Credit</i>	1	2	3	4	5	[]
<i>Quantity discount</i>	1	2	3	4	5	[]
(Possibility for an instalment plan)						

	Not at all		Quite much		Very much	N/A
<i>Installation of product</i>	1	2	3	4	5	[]
(The product might require to be installed at your facility)						

	Not at all		Quite much		Very much	N/A
<i>Insurance and guarantees</i>	1	2	3	4	5	[]

	Not at all		Quite much		Very much	N/A
<i>Maintenance of product</i>	1	2	3	4	5	[]
(Regular preventive maintenance)						

	Not at all		Quite much		Very much	N/A
<i>Repair of product</i>	1	2	3	4	5	[]
(In case of break down or malfunctioning product)						

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	Not at all	2	Quite much	4	Very much	N/A
<i>Support</i> 1		2	3	4	5	[]
(For example: Help-lines and education of your company's staff)						

	Not at all	2	Quite much	4	Very much	N/A
<i>Updates of product</i> 1		2	3	4	5	[]
(For example: Software- and documentation updates)						

B:2

Considering what is available in the market today, please mark **three** of the factors below that you would like to see improvement in?

- | | |
|--|---------------------------------------|
| <i>Availability of spare parts</i> | <i>Maintenance of product</i> |
| <i>Insurance and guarantees</i> | <i>Repair of product</i> |
| <i>Support</i> | <i>Updates of product</i> |
| <i>Installation of product</i> | <i>Financial arrangement - Credit</i> |
| <i>Financial arrangement - Quantity discount</i> | |

C:1

How much does your company consider the following *logistical factors* when choosing between offerings from different suppliers?

	Not at all		Quite much		Very much	N/A
<i>Delivery reliability</i>						
<i>On time</i>	1	2	3	4	5	[]
<i>Right quantity</i>	1	2	3	4	5	[]
	Not at all		Quite much		Very much	N/A
<i>Delivery speed</i>	1	2	3	4	5	[]
(The time from ordering until delivery)						
	Not at all		Quite much		Very much	N/A
<i>Environmental impact of transportation method</i>	1	2	3	4	5	[]
(That the transportation method is not harmful to the environment)						
	Not at all		Quite much		Very much	N/A
<i>Financial arrangements</i>	1	2	3	4	5	[]
(For example: Routines of payment, in suitable currency, security arrangement)						
	Not at all		Quite much		Very much	N/A
<i>Information sharing</i>	1	2	3	4	5	[]
(For example: Information about when your delivery will arrive or how much your supplier has in store)						

C:2

Considering what is available in the market today, please mark **two** of the factors below that you would like to see improvement in?

Delivery reliability - On time

Delivery speed

Delivery reliability - Right quantity

Financial arrangement

Information sharing

Environmental impact of transportation method

D:1

How much does your company consider the following **cost related factors** when choosing between offerings from different suppliers?

	Not at all		Quite much		Very much	N/A
<i>Cost of spare parts</i>	1	2	3	4	5	[]
(The cost of buying spare parts if the product needs to be repaired)						
	Not at all		Quite much		Very much	N/A
<i>Cost of update, maintenance and repair</i>	1	2	3	4	5	[]
	Not at all		Quite much		Very much	N/A
<i>Organisational- and process change related cost</i>	1	2	3	4	5	[]
(Costs that occur because buying the product requires your organization to adapt)						
	Not at all		Quite much		Very much	N/A
<i>Price</i>	1	2	3	4	5	[]
(The price that is paid to the supplier for the product and included services)						
	Not at all		Quite much		Very much	N/A
<i>Relationship costs</i>	1	2	3	4	5	[]
(The cost of maintaining a relationship with the supplier)						
	Not at all		Quite much		Very much	N/A
<i>Switching costs</i>	1	2	3	4	5	[]
(The cost of changing supplier in the future if needed)						

Offering selection factors in the Taiwanese high-tech industry

	Not at all	2	Quite much	3	4	Very much	5	N/A
<i>Transportation costs</i>	1							[]
<i>(The cost of transporting the goods from the supplier)</i>								

E:1

How much does your company consider the following *supplier characteristics* when choosing between different suppliers?

	Not at all		Quite much		Very much
<i>Ability to assist business efficiency</i>	1	2	3	4	5
(The ability of the supplier to help your company to efficiently use the product you are buying)					
	Not at all		Quite much		Very much
<i>Ability to be flexible</i>	1	2	3	4	5
(The degree to which the supplier can be flexible and respond to your company's changing demands)					
	Not at all		Quite much		Very much
<i>Commitment to improvement</i>	1	2	3	4	5
(The degree to which the supplier continually improve its products and processes)					
	Not at all		Quite much		Very much
<i>Commitment to relationships</i>	1	2	3	4	5
(The degree to which the supplier is willing to build a strong relationship with your company)					
	Not at all		Quite much		Very much
<i>Communicational ability</i>	1	2	3	4	5
(Ability to efficiently communicate through personal contact and IT-systems)					

Offering selection factors in the Taiwanese high-tech industry

			Quite much		Very much
<i>Company culture and values</i>	1	2	3	4	5
	Not at all		Quite much		Very much
<i>Environmental friendliness</i>	1	2	3	4	5
(The degree to which the supplier acts in an environmentally friendly way)			Quite much		Very much
	Not at all		Quite much		Very much
<i>Financial condition</i>	1	2	3	4	5
(The credit rating, financial track record and liquidity of the supplier)			Quite much		Very much
	Not at all		Quite much		Very much
<i>Length of relationship</i>	1	2	3	4	5
(That your company have had a long relationship with the supplier)			Quite much		Very much
	Not at all		Quite much		Very much
<i>Level of local presence</i>	1	2	3	4	5
(The extent to which the supplier has activities in the country where your company is located)			Quite much		Very much
	Not at all		Quite much		Very much
<i>Market share of the supplier</i>	1	2	3	4	5
	Not at all		Quite much		Very much
<i>National home base</i>	1	2	3	4	5
(The country where the supplier originates and/or has its production)			Quite much		Very much

Offering selection factors in the Taiwanese high-tech industry

	Not at all		Quite much		Very much
<i>Need advice ability</i> 1	2	3	4	5	
(The supplier's ability to understand your needs and to suggest a solution)					
	Not at all		Quite much		Very much
<i>Openness</i> 1	2	3	4	5	
(The degree to which the supplier is willing to be open about its business with you)					
	Not at all		Quite much		Very much
<i>Owner</i> 1	2	3	4	5	
(Who the owner of the supplier is)					
	Not at all		Quite much		Very much
<i>Personal relations</i> 1	2	3	4	5	
(That your company want to favour a certain supplier because of a close relationship)					
	Not at all		Quite much		Very much
<i>Product assortment</i> 1	2	3	4	5	
(The total amount and diversity of products that the supplier is providing)					
	Not at all		Quite much		Very much
<i>Secured supply chain</i> 1	2	3	4	5	
(That the supplier secures their supply chain in order to fulfil their obligations to your company)					
	Not at all		Quite much		Very much
<i>Stable processes</i> 1	2	3	4	5	
(That the supplier operates internally in a way that insures fulfilment of their obligations)					

Offering selection factors in the Taiwanese high-tech industry

	Not at all	2	Quite much	4	Very much
<i>Supplier reputation</i>	1	2	3	4	5
	Not at all		Quite much		Very much
<i>Supplier size relative to your company size</i>	1	2	3	4	5
(That your annual orders as a percentage of your supplier's overall business is significant)					
	Not at all		Quite much		Very much
<i>Technical capability for innovation</i>	1	2	3	4	5
(Ability to provide new innovative products)					
	Not at all		Quite much		Very much
<i>Trustworthiness</i>	1	2	3	4	5
(That you feel that you can trust the supplier)					

E:2

Considering your suppliers, please mark **five** of the factors below that you would like to see change/improvement in?

- | | |
|--|--|
| <i>Ability to assist business efficiency</i> | <i>Ability to be flexible</i> |
| <i>Commitment to improvement</i> | <i>Level of local presence</i> |
| <i>Commitment to relationships</i> | <i>Length of relationship</i> |
| <i>Openness</i> | <i>Communicational ability</i> |
| <i>Financial condition</i> | <i>Environmentally friendliness</i> |
| <i>Owner</i> | <i>Market share of the supplier</i> |
| <i>National home bas</i> | <i>Need advise ability</i> |
| <i>Personal relations</i> | <i>Product assortment</i> |
| <i>Secured supply chain</i> | <i>Stable processes</i> |
| <i>Supplier culture and values</i> | <i>Trustworthiness</i> |
| <i>Supplier reputation</i> | <i>Technical capability for innovation</i> |
| <i>Supplier size relative to your company size</i> | |

9.4 Ranking list of decisive factors, all categories

1. Price
2. Delivery reliability - On time, Product reliability
3. Support
4. Expected physical life length
5. Delivery reliability - Right quantity
6. Product safety
7. Expected technical life length, Percentage of rejection, Trustworthiness
8. Product performance, Technical capability for innovation
9. Insurance and guarantees
10. Need advise ability
11. Cost of updates, maintenance and repair, Maintenance of product
12. Ability to assist business efficiency, Repair of product
13. Financial arrangements - Quantity discount
14. Availability of spare parts, Environmental impact, Openness
15. Aesthetic design - Material
16. Financial arrangement (logistics)
17. Cost of spare parts
18. Secured supply chain
19. Local presence, Stable processes, Supplier reputation, Updates of product
20. Switching costs
21. Commitment to improvement, Financial condition
22. Delivery speed, Financial arrangements - Credit
23. Information sharing
24. Ability to be flexible, Commitment to relationships
25. Communicational ability, Reputation of brand, Transportation costs
26. Aesthetic design - Shape
27. Product diversity
28. Owner
29. Installation of product
30. Environmental friendliness, National home base
31. Product assortment
32. Company culture and values
33. Organizational- and process change related costs
34. Supplier size relative to your company size
35. Environmental impact of transportation method
36. Personal relations
37. Relationship costs
38. Aesthetic design - Colour

9.5 Factors that need improvement, all categories

Factors	Number of companies that required improvement
<i>1. Ability to be flexible</i>	7
<i>1. Product performance</i>	7
<i>1. Support</i>	7
<i>2. Maintenance of product</i>	6
<i>2. Product reliability</i>	6
<i>2. Secured supply chain</i>	6
<i>3. Commitment to improvement</i>	5
<i>3. Delivery reliability</i>	5
<i>3. Delivery speed</i>	5
<i>3. Information sharing (logistical factor)</i>	5
<i>4. Local presence</i>	4
<i>5. Ability to assist business efficiency</i>	3
<i>5. Availability of spare parts</i>	3
<i>5. Expected technical life length</i>	3
<i>5. Percentage of rejection</i>	3
<i>5. Technical capability for innovation</i>	3
<i>5. Updates of product</i>	3
<i>6. Communicational ability</i>	2
<i>6. Financial arrangements</i>	2
<i>6. Openness</i>	2
<i>6. Product safety</i>	2
<i>6. Repair of product</i>	2
<i>6. Stable processes</i>	2
<i>7. Aesthetic design</i>	1
<i>7. Commitment to relationships</i>	1
<i>7. Company culture and values</i>	1
<i>7. Environmental impact</i>	1
<i>7. Expected physical life length</i>	1
<i>7. Financial condition</i>	1
<i>7. Financial arrangement (logistical factor)</i>	1
<i>7. Insurance and guarantees</i>	1
<i>7. Need advise ability</i>	1
<i>7. Supplier reputation</i>	1

9.6 The Swedish Trade Council ¹²⁸

The Swedish Trade Council (STC) serves the Swedish Government and Swedish business and provides services required to establish a company and its products and services in new markets. Special attention is given to the small and medium-sized companies. STC produce feasibility studies, marketing plans, export strategies, market surveys and competition analyses. They also assist companies in implementing their strategies. In addition, they work continuously to raise export competence in local projects and programs. STC has around 350 employees in 40 countries and a turnover of about 400 million SEK.

The Swedish Trade Council's activities are focused on three areas:

- Export Information – portal for information about Swedish export and international expansion, market information, identification and mediating of business opportunities for companies.
- Export Programs – programs for small and medium-sized enterprises that want to expand internationally, cooperation-based activities for companies in national sector-oriented Industry Sector Groups and Industry Sector Programs.
- Export Consulting – encompasses assignments for individual companies that wish to expand internationally.

STC have been represented in Taiwan since 1983. The office, situated in Taipei, has a staff of international business experts and it also serves as the Swedish visa office in Taiwan and the representative office in Taipei for the Invest in Sweden Agency. ¹²⁹

9.7 The interviewed companies ¹³⁰

The 3C manufacturer

This company is a leading provider of 3C (computer, consumer electronics & communication) total solutions. The company started from computer components such as motherboards, graphic cards, and optical storage devices and today the product portfolio includes desktop bare bone systems, servers, notebooks, PDA, network devices, broadband communications, and mobile phones. The company has 40,000 employees and are present in Asia, Europe and the USA. Headquarter is located in Taipei, Taiwan. The revenues in 2002 was about 3 billions US\$.

¹²⁸ <http://www.swedishtrade.com/about/>, (2005-03-17)

¹²⁹ <http://www.swedishtrade.com/taiwan/>, (2005-03-17)

¹³⁰ The information has been taken from each of the companies' homepages.

The LCD manufacturer

This company is a world-leading manufacturer of large size thin film transistor liquid crystal display (TFT-LCD) panels, which are currently the most widely used flat panel display technology. TFT-LCDs are used in notebook computers, desktop monitors, televisions, digital cameras, portable DVD players, mobile phones, portable games, and car navigation systems, among other applications.

The company was formed in 2001 and sells its TFT-LCD panels primarily to original equipment manufacturing (OEM) service providers, although the company also sells directly to brand name companies and component manufacturers. The company today has about 20,000 employees and in 2003 the net sales was about 3 billion US\$.

The surveillance installation company

This company's main business is to install surveillance equipment. Important customers are the government, banks, colleges, counties and police stations. The company established in 1991 and the main business has not always been surveillance equipment. The company uses seven main suppliers originating from all over the world.

The 2C manufacturer (nr 1)

The company is a provider of varied computing and communication products; mobile phones, wireless LAN products, Internet appliances, smart handheld and graphic calculators. The parent company is a publicly traded company in Taiwan. Founded in 2000, the company is present in Asia, Europe and the USA and headquarter is located in Taipei, Taiwan. The company produces mobile phones under a well-known brand name in Asia.

The 2C manufacturer (nr 2)

Formed in 1984, this company is one of the world's leading manufacturers of computer notebooks. The company also provides computer monitor products and products in the communication field, and has become known throughout the industry as a leader in computer and communication products.

The company's corporate headquarter is located in Taipei, Taiwan, and has established branches in the PRC, South Korea, England and the USA. In 2003, its total revenue was almost 5 billion US\$ and its worldwide workforce over 10,000.

The semiconductor manufacturer

Founded in 1987, this company is one of the world's largest dedicated semiconductor foundry. The company provides fabrication processes, including CMOS logic, mixed-mode/RF, volatile and non-volatile memory, BiCMOS, High Voltage and CMOS Image Sensor.

The company headquarters is located in Taiwan, with account management and engineering services offices in Japan, Europe and the USA. The company operates two advanced 300mm fabs¹³¹, five 8-inch fabs, and one 6-inch fab. The total net sale in 2003 was about 6 billion US\$ and workforce was about 16,000.

The plastic molding company

This company established in 1987 and today the company has about 60 employees in Taiwan and China. They claim to be the most experienced molding factory in Taiwan. The company also has the production technique of injection molding, coating, assembly and IMD.

The biochemical company

This company is a research driven company, making products based on the collagen. Collagen is a fibrous protein constituent of bone, cartilage, tendon, and other connective tissue. Collagen is converted into gelatine by boiling. The company is researching to find new fields of application for collagen. Currently, the company sells medical products and cosmetic products.

¹³¹ Fab = Silicon wafer manufacturing plant