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An Exploratory Study of Outsourcing motives and effects in Sweden and China

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Abstract

Outsourcing refers to a company who contracts with another company to provide services that might otherwise be performed by in-house employees.

The purpose of this thesis is to compare the motives and effects of outsourcing in China and Sweden, trying to provide the explanation of the differences between them.

This paper used the data form questionnaire and e-mail communication with Swedish and Chinese companies to analyze the motives and effects of outsourcing.

Finally, some main conclusions are found as follows: with the development of market, a lot of firms are no longer manufacturing products only in Sweden, but also in China; furthermore, there are some differences between outsourcings of Chinese and Swedish companies; Swedish companies are outsourcing production, because the cost on labors in Sweden is so high that they try to cut their production costs by outsourcing their production to countries with lower cost on labor.

However, there are some limitations of this paper: the investigation mainly focuses on the survey data from Swedish (209 companies) firms but lacks of data of Chinese (35 companies). Moreover, the analysis didn't consider the nations level as the reason of outsourcing.

Generally speaking, through Stata analysis, this study provides some useful information for China's firms by reminding them to learn the outsourcing experience from Swedish companies; for Swedish firms, it's also helpful for them to know the situation in China to obtain more business opportunity in Chinese marketing.

Key words: outsourcing, motives, effects, Sweden, China

Table of Contents

1. Introduction

This chapter is intended to give an overview to the chosen subject and motivation of this thesis. It is starting with a background of the term outsourcing. The purpose and limitation of thesis were presented in this chapter.

1.1 Background

The term outsourcing has become widespread in the last few years. Meanwhile, the acquire knowledge of outsourcing has been developing from both academia and practitioners.[1] Outsourcing is the act of moving some of a firm's internal non-core activities and decision responsibility to outside providers.[2] The non-core business was delegated to contractors, which makes enterprise has more resources to concentrate on the core business thus to increase the core completion.[3] Nowadays, outsourcing has developed from peripheral activities to some vital business process such as product design, logistics, manufacturing and human resource management.

Various aspects of outsourcing have been discussed in large numbers of literatures.
The outsourcing research is mainly concerned with such issues as practical and conceptual framework for outsourcing process, the outsourcing decision support, trend of outsourcing and the evaluating outsourcing strategy.[4] From the global perspective, outsourcing has been applying in many countries. In the past a few years, the geographical trend of outsourcing tend towards unidirectional flow, which implicate some companies in developed countries transfer their outsourcing business to the contractors in developing countries. Theoretically speaking, outsourcing provides more choices and opportunities to the development of companies by reducing the cost of production and getting closer to a new market. A developed country as Sweden, the high cost of labor is difficult for Swedish firms to take

[1] Kakabadse and kakabadse, 2001
[2] Chase el al., 2001
[3] Gary.Hamel and C.K.Prahalad, 1990
[4] Kremic,2006

advantages on production cost. Some Swedish firms expected they would have obtained benefits by using of outsourcing production. The firms in developing countries have been caught up by this trend.[1] As the cheaper source and labour cost, the developing economies are able to gain a comparative in low-end light industries or even some higher segment of the value chain.[2] In this context, China as an outsourcing destination with huge potential, which attracts multinational's investment. At the same time, Chinese companies were adopting outsourcing on their own commercial applications as well.[3]

Although there are a number of potential benefits of outsourcing such as improving effectiveness, focusing core competence, enhancing service or product capability and reducing cost, yet many factors should be considered when make a outsourcing decision. The unpredictable risks may lead the effects of outsourcing disappointedly.[4]

In this thesis, we conduct an investigation in the motives and effects of outsourcing manufacturing in Swedish and Chinese companies respectively, then a comparison between these two countries will be conducted.

1.2 Purpose

The research purposes of this study are:

-- Compare the motives and effects in both Swedish and Chinese companies.

-- Find out possible explanation to the difference between Swedish and Chinese companies.

1.3 Outline of thesis

[1] Nicholas, 2009
[2] Rajan, 2004
[3] Liao, 2007
[4] Brudenall, 2005; Bentsson el al.2005

To illustrate readers clear idea of the thesis, figure 1 shows the outline of the thesis according to the framework.

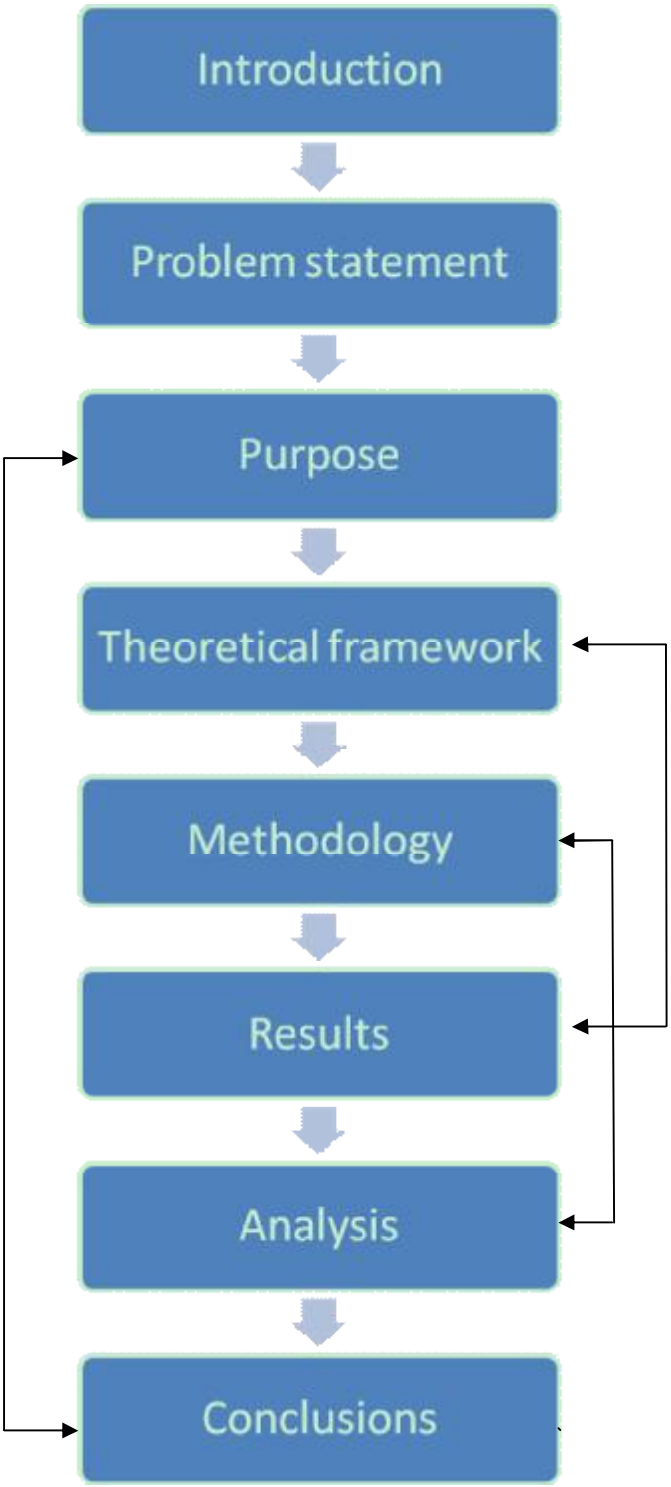

Figure1.3.1: Outline of the thesis – own source according to the thesis framework

1.4 Delimitation

In this thesis, our investigations only focus on the motives and effects of outsourcing manufacturing. .This study was based on a questionnaire of outsourcing. In the part of Chinese companies，we cannot take a large-scale investigation since the limited authority and confidentiality. In addition, we did not visit a case company to investigate the process of making a decision. So it is hard to research the process of a practical outsourcing project. We will fulfill and extend the research in future works. .

2. Methodology

This chapter is to provide a description of the chosen research method that used in this thesis. The qualitative and quantitative researches were conducted. The way of data collection and the analyzing process and validity of this thesis will be described. .

2.1 The design of the study

As we noted before, outsourcing has become a business' trend in different countries and sectors. On this condition, it would be interesting to carry out a comparative study between China (a developing economy) and Sweden (a developed economy). This research aims to compare the motives and effects of outsourcing manufacturing in Swedish and Chinese companies, if there is any difference between the two countries, try to explain the possible reasons. Based on the purpose of this thesis, the design of the study was presented as below:

• This study started by a large amount literature review.

• Analyzing the survey database of Swedish companies.

• Gathering and analyzing data of Chinese companies.

• Comparing these data

• Drawing conclusions.

We will introduce the research methodology detailed in the following sections.

2.2 Data collection

2.2.1 Previous research

There are two types of data, primary and secondary data. Primary data is collected by researchers themselves. The main methods of data collection are surveys, interviews and direct observations. The secondary data is collected by other result or survey. We have been chosen several approaches to gather information which focus on the

research subject. Firstly, we use library system, search engines and database to collect academic articles for a better understanding of research subject. Secondly, our professor Lars Bengtsson provides the survey database and related questionnaire to us. Thirdly, a survey based on the questionnaire was conducted in Chinese companies. The detailed process will presented in following sections.

2.2.2 Outsourcing survey database of Swedish companies

Our supervisors provided us the outsourcing survey database of Sweden companies. It is important to mention the questionnaire here since all the data from Swedish companies were based on the questionnaire for outsourcing (Appendix A.). The questionnaire includes two sections as follow:

Section 1: About the company

F2. Numbers of employees in your company?

Section 2: outsourcing

F39. Has your company outsourced production of some component/product the past three years?

F45. How important was the following motives for outsourcing production in the past three years?

F46. What was the effect of outsourcing?

Each question have a number of detailed choices, different choices depends on the situations of respondents and their companies. The survey database comes from Swedish manufacturing plants of engineering firms in a number of sectors such as metal goods, machinery, office equipment and computer, other electronics, telecommunication, instrumentation, automotive industry and so on.

According to the survey data in the database, totally 207 Swedish companies, there are 113 companies have outsourced projects. These 54 per cent of companies offered

their own opinions about the motives and effect of outsourcing. The other about 46 per cent companies did not have any outsourcing project in the past three years. The different opinions come from the answers of questionnaire that is attached in Appendix. A.

2.2.3 Outsourcing survey in Chinese companies

We conducted a same survey in Chinese companies. Questionnaires were sent to 35 Chinese firms in the first time, but most of the responses are not practicable. The second time survey was conducted in an effective approach. Questionnaires were sent to 35 Chinese companies again and 22 questionnaires were returned.

These Chinese companies include mechanical factory, electronics, household electrical appliance and light industry and so on. But common feature they have is they are the independent corporation which don't include the foreign investment, and develop in china without foreign invest consultant. In our opinion, this kind of corporations is more representative. They acknowledgement about the outsourcing and the problems which they met in the outsourcing are typical among problems which other companies met.

2.3 Analyzing process

Data analysis is an important stage of the research process. The data comes from literature review, database, case study and email communication ect. First careful reading of the information should be made. The second step is data processing to calculate the mean percentage. The details of analysis will be described in the later chapter.

2.4 The quality of the method

2.4.1 Validity

The quality of data gained from true experiment design should genuinely reflect the influence of the controlled variables and should enable generalizations to be made beyond the immediate experimental situation. The level of sophistication of the design and extent of control determine the internal validity of the experimental design, and the extent of the legitimate generalizability of the results gives a rating for the external validity of design.[1] In our study, the data collections were mainly base on the survey data, questionnaires and response' opinion, this is a representation of reality. However, since the time and the data from the response are limited, the result is not so definitive, but it is an existent trend. It is also the limitation of our study. Of course, it is necessary to develop the research in the further study.

2.4.2 Reliability

Reliability is in relation to human perception and intellect, the power of memory and reasoning to organize data and ideas in order to promote understanding. In this thesis, the data analysis show the outsourcing's motives and effects in the past three years which could provide an experience in the future study.

[1] Walliman, 2005

3. Theoretical frameworks

This chapter is a theoretical base to fulfill the purpose of the thesis. Some theories and models of outsourcing were discussed in this chapter.

3.1 Outsourcing definition

There are many definitions of outsourcing in literature. Generally, outsourcing can be defined as the transfer of the active previously performed by in-house to an external organization. In this thesis, "outsourcing is defined as having manufacturing work that was formerly done inside the organization performed by an external supplier." [1]

3.2. Motives of outsourcing

3.2.1 The main motives of outsourcing

According to former research about outsourcing, a number of driven reasons of outsourcing have been identified. The main motive was concerned cost reduction which is the most considerable benefit. From another perspective, the releasing resources and reducing investments were mentioned as existent motives. Otherwise, the motives anent core competence and increase focus were more strategic and far-sighted. In addition, getting access to new competencies, improving the product development and reducing time to market are expected.[2] Bertrand Quelin and Francois Duhamei summarized the main motives which highlighted in the previous literatures (see Table 3.2.1.1).

[1] Bengtsson, 2008
[2] Mclvor,2005

Table 3.2.1.1: The main motives of outsourcing in the literatures

Main motives	Citation
To reduce operational cost	Lacity and Hirschheim (1993b) McFarlan and Nolan(1995); Barthelemy and Gryer (2000); Kakabadse and Kakabadse(2002)
To focus on core competencies	Quinn and Hilmer (1994); Saunders et al. (1997); Alexander McFarlan and Nolan (1995); Kakabadse and Kakabadse (2002)
To reduce capital invested	McFarlan and Nolan (1995); Kakabadse and Kakabadse (2002)
To improve measurability of costs	Barthelemy and Geyer(2002)
To gain access to external competencies and improve quality	Quinn and Hilmer (1994); McFarlan and Nolan (1995); Kakabadse and Kakabadse (2002)
To transform fixed costs into variable costs	Alexander and Young (1996a)
To regain control over internal departments	Lacity and Hirschheim (1993a); Alexander and Young (1996a)

SOURCE: Bertrand Quelin and Francois Duhamei, "Bringing Together Strategic Outsourcing and Corporate Strategy: Outsourcing Motives and Risks," *European Management Journal* Vol.21, No.5, pp.647-661, 2003.

Outsourcing can be driven by various motives.[1] Firstly, turning fixed cost into variable cost will help organization reduce cost. The lower cost structure of supplier also benefits the cost management of organization. Secondly, the improvement driven reasons include improving operating performance (increase quality and productivity,

[1] Greaver, 1999

shorten cycle times), improving management and control, obtaining expertise and technologies through providers and acquiring innovative ideas and so on. Thirdly, in the revenue aspect, organization may gain market access through the provider's network and expand sales and production capacity during periods when such expansion cannot be financed. Fourthly, in organizational level, outsourcing allows companies enhance effectiveness by focusing core business and increase flexibility to meet variables condition. At the same time, to increase product and service value to meet customers' need. Last but not the least, the financially driven reason implies the avoiding investment in certain assets and free up resources for other parts. Another consideration is about cash flow which is generated by transferring assets to the suppliers.

3.2.2 Transaction cost economics

The term "transaction cost" was first put forward by Ronald Coase, then developed by Oliver E. Williamson. Transaction cost economics (TCE) is a very important outsourcing model when we study outsourcing. Transaction cost analysis combines economic theory with management theory to determine the best type of relationship a firm should develop in the market place. The concept of transaction cost analysis is that the properties of a transaction determine what constitute the efficient governance structure-market, hierarchy or alliance. The primary factors producing transactional difficulties include the following:[1]

- **Bounded rationality**—the rationality of human behavior is limited by the ability of the actor to process information.
- **Opportunism**—people are prone to behave opportunistically which leads to self-interest seeking with guile.

[1] Mclvor, 2005

- **Small numbers bargaining**—many bargaining situations are infrequent or involve small quantities where the cost of obtaining full information is prohibitive; i.e. as in an oligopoly.
- **Information impactedness**—asymmetrical distribution of information among the exchanging parties that means one party might have more knowledge than another.

These transaction difficulties and associated costs increase when transactions are characterized by[1]

Asset specificity—indicates transactions which require high investments which are specific to the requirement of a particular exchange relationship.

Uncertainty—indicates ambiguity as to transaction definition and performance.

Infrequency—indicates transaction which are seldom undertaken.

The central theme of transaction costs theory is that the properties of the transaction determine the governance structure. Asset specificity refers to the non-trivial investment in transaction-specific assets. The level of customize equipment or materials involved in the transaction between the buyer and supplier relates to the degree of asset specificity. When asset specificity and uncertainty is low and transactions are relatively frequent, transactions will be governed by market.[2]

3.2.3 Core competencies

Organizations compete for customers, revenue, and market share with products and services that meet customers' need. Core competencies are the innovative combinations of knowledge, special skills, proprietary technologies, information, and unique operating methods that provide the product or the service that customer's

[1] Williamson, 1985
[2] Mclvor,2005

value and want to buy. There are many ways to acquire and develop core competencies:[1]

- -- Hiring talented people;
- -- Renting talented people (consultants, academicians, etc.);
- -- Executing develop contracts (to share the cost of developing core competencies with, for example, suppliers or customers);
- -- Joint venturing (to share existing core competencies);
- -- Licensing (the use of core competencies);
- -- Acquiring or taking equity positions in organizations (who have the core competencies).

Outsourcing is not a substitute for acquiring and developing core competencies (unless the existing and anticipated future core competencies have weakened or are nonexistent, respectively), but it can be beneficial to management. By outsourcing activities that are not core:

- -- Management has more time to effectively focus on what is an important---improving core competency.
- -- Superior provider performance and lower costs bring additional resources to invest in and improve core competencies.
- -- Superior provider expertise in no core areas can be used to improve core competencies.

3.3 Effects of outsourcing

In the some previous research, the effects of outsourcing have been evaluated in different level of performance. Theoretically speaking, outsourcing can be a useful tool to help organization gaining profit. It is an opportunity to companies learning from outside expertise and making benefit from it. However, in resent study, fewer

[1] Maurice F. Greaver II 1999

firms achieved significant benefits, especially what they expected before. Worse than all, the profitability in some firm decreased in outsourcing year.[1]

According to previous study, the expected effects on outsourcing are mainly represented in cost reduction, innovation ability Benefits from supplier,[2] improving operational capabilities and improving risk management.[3] Our study will investigate the effects of outsourcing, which evaluate by above theoretical frameworks.

[1] Wood et at.2000
[2] Alexander and Young, 1996
[3] Barthe and Geyer, 2000

4. Data analysis

Data origin: about the data origin, we can refer to section 2.2.2 and section 2.2.3.

Table 4.1 shows the proportion of outsourcing in sample firms. In this thesis, we only focus on the outsourcing firm. These firms have mainly outsourced the standardized products or relatively simple products of low value to the customer. They also outsourced complex product with high customer value and some of them outsourced the design work that belongs to the outsourced products.[1]

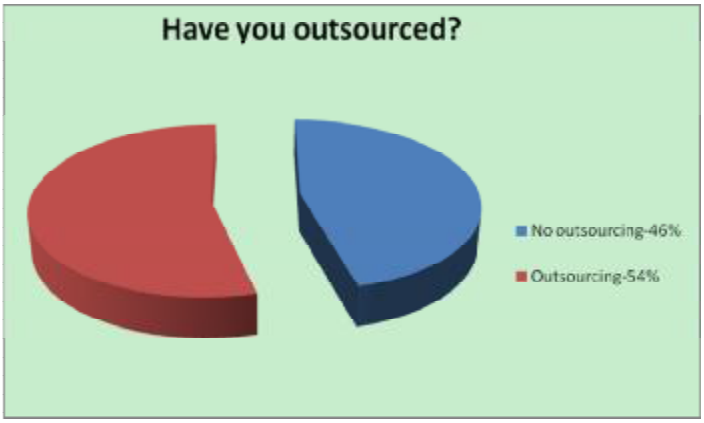

Table 4.1: Proportion of outsourcing in sample firms?

Base on the data collection, we obtain the general situation in Chinese manufacturing companies as table 4.2, there are just 18% companies choose outsourcing, 27% companies choose self-support, and 55% companies is combination of these two forms.

Meanwhile table 4.2 shows the situation of outsourcing in companies of China.

[1] Bengtsson, 2008

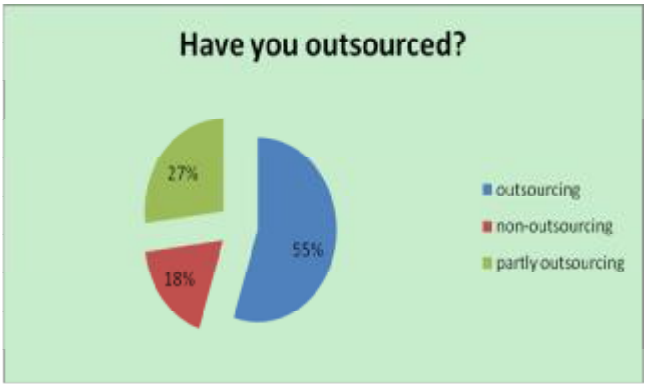

Table 4.2: Outsourcing in China' companies

4.1 one-way anova

First of all, stata software will be applied to the combination of data for Sweden and China to study how the 18 factors designed in the questionnaire will function in outsourcing.

To achieve the aim, one-way anova will be used to analyze the situation without considering the internal function among the factors. Analysis result will be shown in table 4.1.1 and 4.1.2.

factor	Sweden	China	total	between	within	F	P
Decrease costs	3.65	3.82	232.77	0.27	232.5	0.14	0.71
Increase control over costs	2.46	3.09	195.7	3.64	191.76	2.4	0.12
Reduce fixed costs	2.87	3.09	245.6	0.48	245.12	0.23	0.63
Reduce investments	3.16	3.45	264.62	0.84	263.78	0.38	0.54
Capital from selling the production unit	1.05	3	111.6	22	89	29.54	0
Risk spreading	1.96	2.9	163.7	8.93	154.76	6.67	0.01
Access to competence	2.22	2.54	195.06	1.01	194.04	0.62	0.43
Increase product quality	1.99	2.45	179.86	2.14	177.72	1.44	0.23
Benefit from supplier innovation capability	1.91	2.27	159.7	158	1.26	0.94	0.33
Faster introduction of products	1.71	3.36	153.87	27.14	126.72	25.27	0
Lower development costs	1.66	2.81	149.52	13.33	136.2	11.65	0
Hard to control the business	1.71	3.81	180.33	43.4	136.92	37.41	0
Increase focus	2.83	4.27	263.87	20.66	243.21	10.02	0
Free resources for other investments	3.55	4.27	196.9	5.23	191.65	3.28	0.07
Increase volume flexibility	3.17	4.27	258	21.1	245.9	5.86	0.02
More clear production flow	3.4	3.09	230.26	0.95	229.3	0.5	0.48
Lack of capacity	2.82	2.31	251.36	0	251.36	0	0.98

Table 4.1.1 one-way analysis on motivate between Sweden and China

Statistical tests results are shown in table 4.1.1 above. During the process of the one-way anova, it can be summarized that outsourcing companies in both Sweden and China are the same in the areas of Decrease costs，Increase control over costs，Reduce fixed costs，Reduce investments ，Access to competence，Increase product quality，Benefit from supplier innovation capability，Free resources for other investments ，More clear production flow，Lack of capacity. This is because both Swedish and Chinese F values are low. The general variances are composed of the individual variance of groups. As there are little variances among groups, it is reasonable that the general variances are not huge.

However there might be variances among other factors. To define if there are other variances, P value has been tested shown as table 4.1.2 below.

P / factor	t value	means			t value	means		
		>3	!=3	<3		>3	!=3	<3
Decrease costs	5.28	1	0	0				
Increase control over costs	-4.05	0	0	1				
Reduce fixed costs	0.9	0.18	0.36	0.81				
Reduce investments	1.4	0.41	1.16	0.08				
Access to competence	-6.42	0	0	1				
Increase product quality	-8.69	0	0	1				
Benefit from supplier innovation capability	-9.92	0	0	1				
Free resources for other investments	-0.24	0.4	0.81	0.06				
More clear production flow	2.95	1	0	0				
Lack of capacity	-1.31	0.09	0.19	0.91				
	Sweden				China			
Faster introduction of products	-12.71	0	0	1	1.49	0.92	0.17	0.08
Lower development costs	-13.43	0	0	1	-0.45	0.33	0.65	0.67
Hard to control the business	-12.58	0	0	1	2.04	0.96	0.068	0.03
Increase focus	-1.17	0.12	0.24	0.88	4.67	1	0	0
Increase volume flexibility	1.22	0.89	0.22	0.11	4.67	1	0	0
Capital from selling the production unit	-18.22	0	0	1	0	0.5	1	0.5
Risk spreading	9.33	0	0	1	-0.36	0.36	0.72	0.63

Table4.1.2 P-value test

These assumptions had been made in the process of test in P value. It is assumed that means = 3 indicates the motive is moderately strong. And when means > 3, it indicates a comparatively strong motive. When means < 3 it indicates a weak motive. The results shown in the table above can be divided into two situations.

One situation suggests that Swedish and Chinese outsourcing companies have same motive. In this case, it can be included as (1) both of them have strong motive in outsourcing, and both means > 3. The reasons of a strong motive are: Decrease costs，Free resources for other investments ，and More clear production flow. Their P values have been tested before the tests of T values.（2） both of them have moderate motive in outsourcing, and means =3. The reasons of the moderate motives are：Reduce fixed costs，Reduce investments, and Lack of capacity. Their P values have been tested before the tests of T values. （3）both of them have weak motives in outsourcing, and means < 3. The reasons for the weak motives are：Increase control over costs，Access to competence，Increase product quality，and Benefit from supplier innovation capability. Their P values have been tested before the tests of T values.

The other situation suggests that Swedish companies and Chinese companies have different motives. According to table 5, it is easy to find that there are huge differences between the motives of Swedish companies and Chinese companies in the factors of Capital from selling the production unit，Risk spreading，Faster introduction of products (reduce TTM)，Lower development costs，Hard to control the business，Increase focus，and Increase volume flexibility. One-way anova indicates that if there are huge variances among individual groups, there will be great differences in F values. In another word, it can be included that there are huge differences between the Swedish companies and Chinese companies. Firstly, Chinese companies generally have a stronger motive in outsourcing than that of Swedish companies. The reasons are: Capital from selling the production unit，Risk spreading，Faster introduction of products (reduce TTM)，Lower development costs，and Hard to control the business。On the other hand, Swedish companies have motives only in accordance to Increase

focus and Increase volume flexibility. However Chinese companies have moderate motives in outsourcing in Capital from selling the production unit，Risk spreading，Faster introduction of products (reduce TTM)，and Lower development costs. And strong motives in outsourcing in Hard to control the business，Increase focus，and Increase volume flexibility.

According to previous assumptions: means = 3 indicates a moderate strong motive; means > 3 indicates a comparatively strong motive; and means < 3 indicates a weak motive. After the analysis, it can be found that means values of the factors in Decrease costs，Free resources for other investments ，and More clear production flow are > 3，which suggests a strong motive in outsourcing, and their P values have been tested before the tests of T values. Moreover, the means values of the factors in Reduce fixed costs，Reduce investments, and Lack of capacity are =3，which suggests a moderate motive in outsourcing. The means values of the factors in Increase control over costs，Access to competence，Increase product quality，and Benefit from supplier innovation capability are <3，which indicates a weak motive in outsourcing.

4.2 Two-way anova

The data of Swedish companies and Chinese companies were combined together. And then the software of stata was applied to arrange the 17 factors of the questionnaire in accordance to the factors listed as 1-16 in the table. And the companies were listed as 1-121. Swedish companies were listed as 1 while Chinese as 2. Data has been put into the two-way analysis. The results are shown below.

	Partial ss	Df	Ms	F	Prob>1
Model	1768.26	137	12.90	9.56	0
factor	916.58	16	57.29	42.42	0
Company	849.09	121	7.01	5.20	0
country	0	0			
residual	2586.65	1913	1.35		
total	4351.88	2050	2.12		

Table 4.2.1 two-way anova on motivate between Sweden and China

It can be found in table 4.2.1, all factors have different affects on outsourcing according to the standard that $a = 0.05$, F=42.42，p=0. However, if the tests are designed in accordance to company factor at a standard of $a = 0.05$, then F=5.20，p=0，and the decision of outsourcing or not will be different for each company.

4.3 Principal factor analysis

4.3.1 Sweden group

Principal factor analysis was first designed by Hotelling in 1993. The Principal factor analysis uses the idea of dimensionality reduction with little lost of information, and integrates large quantity of factors into fewer general factors. The general factor is the so called principal factor. Each component of the principal factor is a linear combination of original variables, and has nothing to do with each other.

Why the principal factor analysis was used is to analyze the main factor which drives company's outsourcing. Companies in Sweden were divided into the Sweden group while Chinese companies into Chinese group. Sata was also used as the main tool for the analysis.

First of all, we carried out principal component analysis of the appropriate test; we use the Kaiser-Meryer-Olkin test results are as follows:

Decrease costs	Increase control over costs	Reduce fixed costs	Reduce investments	Capital from selling the production unit
0.4715	0.7416	0.7515	0.6828	0.7855
Risk spreading	Access to competence	Increase product quality	Benefit from supplier innovation capability	Faster introduction of products
0.7276	0.8371	0.8179	0.8487	0.7613
Lower development costs	Hard to control the business	Increase focus	Free resources for other investments	Increase volume flexibility
0.8147	0.8287	0.6898	0.6352	0.6054
More clear production flow	Lack of capacity	Overall		
0.7217	0.3491	0.7398		

Table 4.3.1.1 Sweden-motivate -KMO value

Table 4.3.1.1 shows that we can see in addition to Decrease costs and Lack of capacity on the two motives, KMO value is relatively low, the rest are in the more than 0.6, the overall KMO value reached 0.7398, and thus it would be appropriate to carry out principal component analysis.

Table below shows the results of principal component analysis, which includes the eigenvalue and eigenvector.

component	eigenvalue	difference	proportion	cumulative
Comp1	4.95	3.14	0.2914	0.2914
Comp2	1.81	0.13	0.1063	0.3977
Comp3	1.68	0.17	0.0987	0.4964
Comp4	1.51	0.32	0.0886	0.5850
Comp5	1.18	0.27	0.0693	0.6543
Comp6	0.89	0.09	0.0529	0.7072
Comp7	0.83	0.11	0.0489	0.7561
Comp8	0.72	0.86	0.0427	0.7987
Comp9	0.63	0.89	0.0376	0.8363
Comp10	0.55	0.10	0.0324	0.8687
Comp11	0.45	0.28	0.0263	0.8950
Comp12	0.41	0.07	0.0246	0.9196
Comp13	0.34	0.30	0.0204	0.9400
Comp14	0.31	0.05	0.0186	0.9586
Comp15	0.27	0.33	0.0156	0.9743
Comp16	0.23	0.26	0.0137	0.9879
Comp17	0.21		0.0121	1.0000

Table 4.3.1.2 Sweden-motivate-eigenvalue

The results of this analysis are mainly discussed here. The first component occupies the largest share, which 29.14% of the total variance, which is close to 1 / 3. The first five components occupy a share of the total variation 65.43%, which is close to 2 / 3. However, other components do not occupy much share, which will be skipping. Therefore, we discuss the first five principal components. At the same time, we found that the smallest eigenvalue has reached 0.21, not close to zero; which means there is no existence of a linear relationship in motives.

Table below is for the eigenvector.

Factor	Comp1	Comp2	Comp3	Comp4	Comp5
Decrease costs	0.0902	0.4505	-0.0032	-0.2169	-0.2689
Increase control over costs	0.2700	0.2864	0.1371	0.2081	-0.0888
Reduce fixed costs	0.2137	0.4438	0.0066	0.1730	0.1776
Reduce investments	0.1842	0.2255	-0.0721	0.0498	0.6631
Capital from selling the production unit	0.1963	0.0297	-0.1569	0.3390	-0.0027
Risk spreading	0.2678	0.1580	0.1160	0.3498	-0.0104
Access to competence	0.3371	-0.1275	-0.1234	-0.1537	0.2205
Increase product quality	0.3091	-0.1412	-0.3036	-0.1442	0.1151
Benefit from supplier innovation capability	0.3260	-0.2204	-0.2129	-0.1437	0.0611
Faster introduction of products	0.2777	-0.3225	-0.0906	0.0477	-0.2787
Lower development costs	0.2965	-0.1678	-0.1817	0.0999	-0.1099
Hard to control the business	0.2949	-0.1119	0.0692	0.2663	-0.3226
Increase focus	0.2422	0.1411	0.1472	-0.3655	-0.1696
Free resources for other investments	0.1411	-0.2430	0.3863	-0.2599	0.1320
Increase volume flexibility	0.1562	-0.0121	0.5658	0.1200	-0.1368
More clear production flow	0.2393	0.0654	0.3138	-0.4289	0.1010
Lack of capacity	-0.0397	-0.3529	0.3866	0.3036	0.3380

Table 4.3.1.3 Eigenvector about Sweden-motivate

According to table 4.3.1.3, it can be discussed as: in the column of component 1, the factors are more or less the same about $\sqrt{1/17} = 0.2425$ but the values of Decrease costs and Lack of capacity are really small. The phenomenon suggests that component 1 is a general index which can be used for all companies to identify the degree of outsourcing motive. And it can be used as:

comp1=0.0902*Decrease costs+0.2700*Increase control over costs
+0.2137*Reduce fixed costs+0.1842*Reduce investments
+0.1963*Capital from selling the production unit+0.2678*Risk spreading
+0.3371*Access to competence+0.3091*Increase product quality
+0.3260*Benefit from supplier innovation capability
+0.2777*Faster introduction of products+0.2965*Lower development costs
+0.2949*Hard to control the business+0.2422*Increase focus
+0.1411*Free resources for other investments+0.1562*Increase volume flexibility
+0.2393*More clear production flow -0.0397*Lack of capacity

In the column of component 2, there are more differences among the factors. The values of Decrease costs，and Reduce fixed cost are comparatively huge. The values of Increase control over costs and Reduce investments are also not small. These factors are related to reducing the costs and investment including fixed cost.

Meanwhile there are negative values in the column of component 2 which are Access to competence，Increase product quality，Benefit from supplier innovation capability，Faster introduction of products (reduce TTM)，Lower development costs，Hard to control the business，Free resources for other investments，Increase volume flexibility，and Lack of capacity. These factors are mainly related to product quality and control of the production chain, new product introduction and development.

Therefore, the second principal component of main motive for outsourcing enterprises is mainly on cost control and reduction. The less cost is the better control of investment will be, and the stronger outsourcing motives will be. The component 2 can be expressed as:

comp2=0.4505*decreaseco~s+0.2864*Increase control over costs
+0.4438*Reduce fixed costs+0.2255*Reduce investments
+0.0297*Capital from selling the production unit+0.1580*Risk spreading
-0.1275*Access to competence-0.1412*Increase product quality
-0.2204*Benefit from supplier innovation capability
-0.3225*Faster introduction of products-0.1678*Lower development costs
- 0.1119*Hard to control the business+0.1411*Increase focus
-0.2430*Free resources for other investments
-0.0121*Increase volume flexibility+0.0654*More clear production flow
-0.3529*Lack of capacity

There are even more differences among factors in component 3. The main stresses concentrate on the factors of Increase volume flexibility， Lack of capacity，and More clear production flow. Those indicators indicate that reflect both the flexibility of enterprise production, management in enterprises. Positive sign indicates that if the enterprises strengthen corporate governance, and enhance the production flexibility, there will be stronger motives. Besides, there are some negative values of factors: Capital from selling the production unit，Access to competence，Increase product quality，Benefit from supplier innovation capability，Lower development costs，Free resources for other investments，and Lack of capacity. Thus the main reason for outsourcing of component 3 is enterprise management. Component 3 can be expressed as:

Comp3=-0.0032*Decrease costs+0.1371*Increase control over costs
+0.0066*Reduce fixed costs-0.0721*Reduce investments
-0.1569*Capital from selling the production unit+0.1160*Risk spreading
-0.1234*Access to competence-0.3036*Increase product quality
-0.2129*Benefit from supplier innovation capability
+0.0906*Faster introduction of products-0.1817*Lower development costs
+0.0692*Hard to control the business+ 0.1472*Increase focus
+0.3863*Free resources for other investments +0.5658*Increase volume flexibility +(
+0.3866*Lack of capacity

There are both negative and positive values of factors in component 4. Positive values are in factors of Increase control over costs ， Reduce fixed costs ， Capital from selling the production unit，Risk spreading，Hard to control the business，and Lack of capacity. In column 4 some positive values are negative in column 3, which stressed the driving reasons of profits in outsourcing. Meanwhile the positive values in column 4 are: Decrease costs，Access to competence，Increase product quality，Benefit from supplier innovation capability，Increase focus，Free resources for other investments，and More clear production flow. The negative values include a wide range. Component 4 indicates the ability of profits in outsourcing. It can be expressed as:

Comp4=-0.2169*Decrease costs+0.2081*Increase control over costs
+0.1730*Reduce fixed costs+0.0498*Reduce investments
+0.3390*Capital from selling the production unit
+0.3498*Risk spreading-0.1537*Access to competence
-0.1442*Increase product quality -0.1437*Benefit from supplier innovation capability
+0.0477*Faster introduction of products+0.0999*Lower development costs
+0.2663*Hard to control the business-0.3655*Increase focus
-0.2599*Free resources for other investments+0.1200*Increase volume flexibility
-0.4289*More clear production flow +0.3036*Lack of capacity

In component 5, the positive values are of factors: Reduce fixed costs，Reduce investments ， Access to competence，and Lack of capacity. They suggest the reduction of costs and the motives for production abilities. Meanwhile the negative values are Decrease costs，Increase control over costs，Faster introduction of products (reduce TTM)，Lower development costs，Hard to control the business，Increase focus，and Increase volume flexibility. The negative values cover a lot. The component 5 of Swedish companies' outsourcing reason is to reduce the investment cost, which is different from the cost of component 2. Component 5 can be expressed as:

Comp5=-0.2689*Decrease costs-0.0888*Increase control over costs
+0.1776*Reduce fixed costs +0.6631*Reduce investments
-0.0027*Capital from selling the production unit -0.0104*Risk spreading
+0.2205*Access to competence+0.1151*Increase product quality
+0.0611*Benefit from supplier innovation capability
-0.2787*Faster introduction of products-0.1099*Lower development costs
+0.3226*Hard to control the business-0.1696*Increase focus
+0.1320*Free resources for other investments-0.1368*Increase volume flexibility
+0.1010*More clear production flow +0.3380*Lack of capacity

Generally speaking, among the five components, component 1 suggests a general index of the degree of motive in outsourcing for companies in Sweden. Component 2 suggests that the motive to outsourcing is to control the costs. Component 3 suggests that the motive is to enhance enterprise management and production flexibility. Component 4 suggests that the motive is to gain profits directly from outsourcing. Component 5 suggests that the motive is to reduce investment costs and gain competitiveness.

4.3.2 China group

The same theory was applied to companies in China. However, the limitation of resources of Chinese companies results in a incomplete data. The procedure is the same as that of Sweden group. Firstly the result will be shown in table 4.3.2.1.

component	eigenvalue	difference	proportion	cumulative
Comp1	3.01	0.74	0.1770	0.177.0
Comp2	2.27	0.26	0.1337	0.3107
Comp3	2.01	0.13	0.1183	0.4290
Comp4	0.89	0.30	0.1109	0.5399
Comp5	1.59	0.21	0.0933	0.6333
Comp6	1.38	0.15	0.0811	0.7143
Comp7	1.23	0.20	0.0723	0.7866
Comp8	1.02	0.40	0.0603	0.8469
Comp9	0.63	0.07	0.0372	0.8841
Comp10	0.56	0.07	0.0330	0.9171
Comp11	0.49	0.17	0.0289	0.9460
Comp12	0.32	0.03	0.0189	0.9669
Comp13	0.29	0.14	0.0173	0.9822
Comp14	0.15	0.07	0.0091	0.9914
Comp15	0.085	0.03	0.0050	0.9964
Comp16	0.056	0.05	0.0033	0.9997
Comp17	0.0059		0.0003	1.0000

Table 4.3.2.1 China-motivate eigenvalue

From the table above, the value of component 1 was the largest, which occupies 17.70%. And the first five components occupy 63.33% which is close to 2/3. However, the rest occupy not too much. As a result, only the first five components will be discussed. Meanwhile the smallest value is 0.0059 which is quite close to zero. It is an indication of the line relationship of Chinese companies in outsourcing motives.

Table 4.3.2.2 is the eigenvector table.

Factor	Comp1	Comp2	Comp3	Comp4	Comp5
Decrease costs	-0.1018	0.0708	-0.0528	0.2915	0.1920
Increase control over costs	-0.1087	-0.1306	0.0842	0.0623	0.3787
Reduce fixed costs	0.2011	-0.4047	-0.0551	0.0240	-0.3077
Reduce investments	0.4198	0.0045	-0.0002	0.2900	0.2006
Capital from selling the production unit	-0.0462	0.2342	0.1240	0.5598	-0.1294
Risk spreading	0.1794	0.3314	0.2605	-0.3236	0.1058
Access to competence	0.1304	0.2226	0.2021	0.2788	0.3632
Increase product quality	0.3850	0.1225	0.3068	0.0769	0.0337
Benefit from supplier innovation capability	0.3319	0.0402	0.3849	-0.0957	-0.0652
Faster introduction of products	0.0511	0.3771	0.0029	-0.4025	0.2366
Lower development costs	0.3599	-0.1277	0.4097	-0.0578	-0.1315
Hard to control the business	0.1964	0.1697	-0.0252	-0.1910	-0.4483
Increase focus	0.2267	0.2484	0.3156	-0.0583	-0.2207
Free resources for other investments	0.0761	0.2833	-0.3047	0.1743	-0.2726
Increase volume flexibility	-0.1326	-0.4237	0.0503	-0.2143	0.2914
More clear production flow	0.2221	-0.2525	0.4442	-0.2102	-0.1423
Lack of capacity	-0.3957	0.0960	-0.2415	0.1069	0.1308

Table 4.3.2.2 Eigenvector about China-motivate

The greatest values are on the factors of Reduce investments，Increase product quality ，Lower development costs，and Lack of capacity. Those four factors indicate the reduction of investment and increase of production quality, and reduction on investment cost on new productions. Negative values are for factors of Decrease costs，Increase control over costs，Risk spreading，Benefit from supplier，Free resources for other investments，and More clear production flow. They suggest companies gain profits directly on reducing costs and outsourcing. This means that Chinese companies' motive on outsourcing is reducing investment cost, increasing production quality and reducing costs on new productions. The expressions will be attached in chapter 4.3.1.

The greatest values of component 2 concentrate on factors of Risk spreading，Capital from selling the production unit，Access to competence，Increase focus，and Free resources for other investments. This means the main motive of outsourcing is to distribute the risks, gain profits directly from competitiveness. The negative values are Increase control over costs，Reduce fixed costs，Lower development costs，More clear production flow，and Lack of capacity. They are indications of costs control, which means the motives for Chinese companies outsourcing is risk distribution and direct profits from competitiveness.

The greatest value of component 3 concentrate on factors of Increase product quality, innovation capability, Lower development costs, and more clear production flow. This indicates that companies pay attentions to the production process. One of the strong motives of outsourcing is to manage the production procedure, increase the production quality and reduce the costs. Meanwhile the negative values are of factors for Free resources for other investments ， and Lack of capacity.

The greatest value of component 4 concentrates on Capital from selling the production unit. It means companies' ability of gaining profits / unit on outsourcing.

Like the component1, the negative factors are Risk spreading，and Faster introduction of products.

The greatest values of component 5 concentrate on Increase control over costs，Access to competence，and increase volume flexibility. They indicate the control on costs, increase of competitiveness and enhancing ability of protection from risks. The negative values are Reduce fixed costs，Hard to control the business，Increase focus，and Free resources for other investments. Those four factors also suggest the reduction on costs, management and competitiveness.

Generally speaking, component 1 suggests the motive on investment costs, increase of production quality and reduction of cost on new productions. Component 2 suggests a distribution of risks, increase the ability of gaining profits directly on outsourcing and increase competitiveness. Component 3 suggests a better management on production procedure, increase of production quality, and saves on costs. Component 4 suggests the motive on direct profits on outsourcing, and component 5 on the ability to protection from risks.

5. Efficient data analysis

This chapter provides a compare perspective on the outsourcing survey in Swedish and Chinese firms and analyses the results and related theory in this thesis.

According to the respond of Chinese companies, we found most companies outsourced logistics. The survey database of Swedish firms is about outsourcing production. Although we cannot say that all Chinese companies just outsourced logistics, but we may deduce outsourcing logistics in Chinese companies is an existent common phenomenon.

Compare the proportion of outsourcing in Sweden with the proportion in China, as the following chart displays more than half firms have outsourcing project. The 73% Chinese companies outsourced logistics and the 54% Swedish companies outsourced their production in the past three years, which means outsourcing to external suppliers or service providers is a common way to enterprises in their operations.

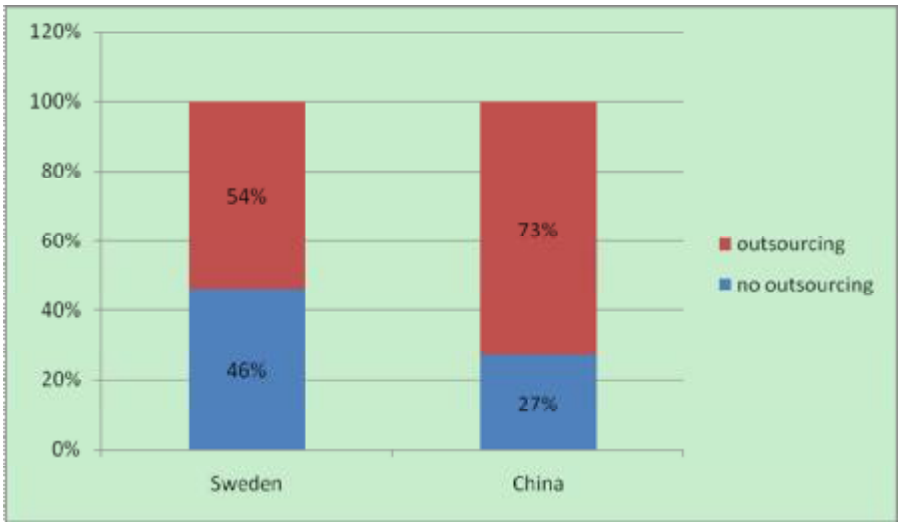

Figure 5.1: Share of outsourcing of companies in Sweden and China

5.1 One way anova

Efficient data has been dealt by using the same method as for motive data. The information of Sweden and China were listed together by using stata software to analyze the 16 factors functions on motives of outsourcing.

One way anova has been applied without consideration of the internal affects among the factors. The result is shown in table 5.1.1 and 5.1.2 below.

factor	Sweden	China	total	between	within	F	P
Cost of outsourced component	0.87	1.27	230	1.59	228.41	0.84	0.36
Control over costs	0.51	1.27	151.34	5.69	145.65	4.65	0.03
Quality	0.27	0.9	137.87	0.04	137.82	0.03	0.85
Production lead time	-0.73	0.72	166	6.4	159.6	4.77	0.03
Lead time order to delivery	0.02	0.36	125.7	1.19	124.5	1.14	0.29
New functionality in the outsourced product	0.01	0.18	476	0.7	47.53	0.17	0.68
Efficiency in the remaining production	0.77	0.63	90.1	0.19	89.91	0.26	0.61
Indirect costs	0.34	0.81	146.59	2.2	144.38	1.8	0.18
Time for new product development	0.23	1.09	67.59	7.14	60.17	0	0
Time for industrialisation	0.21	0.64	57.06	1.75	55.31	3.76	0.05
Cost for developing new products	0.14	1.18	58.05	10.74	47.31	27.02	0
Ability to manage volume changes	0.94	1.18	120.79	0.6	120.23	0.6	0.44
Capital tied up	0.56	0.73	127.2	0.26	127.23	0.25	0.62
Ability to adapt product to customers	-0.09	0.9	72	10	61.99	19.05	0
After market service	-0.01	0.27	45.97	0.79	45.12	2.09	0.15
Delivery on time	0.22	-0.09	153.24	1.01	152.22	0.79	0.38

Table 5.1.1: One-way anova on efficiency

The tests show that the companies in Sweden and China have a more or less same result on Cost of outsourced component，Quality，Lead time order to delivery，New functionality in the outsourced product，Efficiency in the remaining production，Indirect costs，Time for industrialization，Ability to manage volume changes ，Capital tied up ，After market service，and Delivery on time. The F values for individual groups are small; as a result the general variance will be small.

However, there might be other different factors. To test if there are more differences, P value has been tested, shown in table 5.1.2.

P / factor	t value	means			t value	means		
		>0	!=0	<0		>0	!=0	<0
Cost of outsourced component	7.29	1	0	0				
quality	0.34	0.63	0.74	0.37				
Lead time order to delivery	0.53	0.7	0.6	0.3				
New functionality in the outsourced product	1.88	0.96	0.06	0.03				
Efficiency in the remaining production	9.76	1	0	0				
Indirect costs	3.86	1	0	0				
Time for industrialisation	4.05	1	0	0				
Ability to manage volume changes	10.51	1	0	0				
Capital tied up	6.17	1	0	0				

After market service	0.29	0.61	0.77	0.38				
Delivery on time	1.93	0.97	0.06	0.04				
	Sweden				China			
Control over costs	4.74	1	0	0	9.04	1	0	0
Production lead time	0.64	0.26	0.52	0.73	3.08	0.99	0.01	0
Time for new product development	3.41	1	0	0	4.35	1	0	0
Cost for developing new products	2.67	1	0.01	0	3.63	1	0	0
Ability to adapt product to customers	-1.32	0.09	0.19	0.9	4.3	1	0	0

Table 5.1.2: P value test

Assumptions were made. Means = 0 suggests that there is no effect. Means > 0 suggests that the effect is good. Means <0 suggests that the effect is not good. Two situations were divided.

One situation is that the effect of outsourcing for Swedish companies and Chinese companies are the same. (1) both of their effect are good, and means > 0. Then the factors are Cost of outsourced component，New functionality in the outsourced product，Efficiency in the remaining production，Efficiency in the remaining production, Ability to manage volume changes ，and Capital tied up. (2) both of them do not have any effect, and means = 0. The factors are Quality，Lead time order to delivery，After market service，and Delivery on time.（3）both of them have bad effect, and means < 0. There are no such factors.

The other situation is that the effect of outsourcing for Swedish companies and Chinese companies are quite different. The factors are Control over costs，Production lead time，Time for new product development，Cost for developing new products，and Ability to adapt product to customers. One way anova suggests that the more variance among components, the larger F value will be, and the more differences existing between Swedish companies and Chinese companies. Chinese companies are doing better than Swedish companies in Control over costs, Time for new product development，Cost for developing new products，and Ability to adapt product to customers. However, Swedish companies do not have any good effect on those factors, and have bad effects on Production lead time. Meanwhile Chinese companies have obvious good effects on Control over costs，Time for new product development，Cost for developing new products，and Ability to adapt product to customers.

5.2 Two way anova

The data of Swedish companies and Chinese companies were combined together. And then the software of stata was applied to arrange the 16 factors of the questionnaire in accordance to the factors listed as 1-16 in the table. And the companies were listed as 1-121. Swedish companies were listed as 1 while Chinese as 2. Data has been put into the two-way analysis. The results are shown below.

	Partial ss	Df	Ms	F	Prob>1
Model	605.08	136	4.45	5.76	0
factor	193.25	15	12.89	16.68	0
Company	409.06	121	3.38	4.38	0
country	0	0			
residual	1387.77	1797	0.77		
total	1992.84	1933	1.03		

Table 5.2.1: Two-way anova on efficiency

It can be found in table 15, all factors have different affects on outsourcing according to the standard that $a = 0.05$, F=16.68，p=0. However, if the tests are designed in accordance to company factor at a standard of $a = 0.05$, then F=4.38，p=0，and the decision of outsourcing or not will be different for each company.

5.3 Principal components analysis

5.3.1 Sweden group

Based on previous study, the effect of Swedish companies' outsourcing will be investigated by using principal components analysis. Stata software will be applied toanalyze pca. Table below shows the result.

component	eigenvalue	difference	proportion	cumulative
Comp1	3.78	1.78	0.2436	0.2364
Comp2	2.00	0.48	0.1249	0.3613
Comp3	1.52	0.04	0.0949	0.4562
Comp4	1.47	0.22	0.0921	0.5483
Comp5	1.25	0.14	0.0783	0.6266
Comp6	1.11	0.13	0.0697	0.6963
Comp7	0.98	0.27	0.0616	.7579
Comp8	0.71	0.07	0.0441	0.8020
Comp9	0.64	0.10	0.0399	0.8419
Comp10	0.54	0.07	0.0339	0.8759
Comp11	0.47	0.04	0.0297	0.9055
Comp12	0.43	0.08	0.0270	0.9326
Comp13	0.35	0.09	0.0220	0.9546
Comp14	0.26	0.03	0.0166	0.9712
Comp15	0.23	0.08	0.0147	0.9858
Comp16	0.23		0.0142	1.0000

Table 5.3.1.1: Sweden-efficiency-eigenvalue

Component 1 occupies 23.64% of the total share. The first 6 components occupy 69.63%, which is close up to 70%. As a result, only first 6 factors will be taken into consideration. The smallest component 0.23 suggests no existence of linear relationship. As table 5.3.1.2 shows the eigenvector of the first 6 components.

Factor	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6
Cost of outsourced component	0.2384	-0.0905	0.1512	-0.4737	0.2387	-0.0825
Control over costs	0.2963	-0.2039	0.1812	-0.3326	-0.0826	-0.2598
Quality	0.2684	-0.1649	0.0193	-0.2102	-0.3322	-0.4775
Production lead time	0.3718	-0.1471	-0.3772	0.0596	-0.1737	0.0320
Lead time order to delivery	0.3143	-0.0861	-0.4288	0.2111	-0.0393	0.1039
New functionality in the outsourced product	0.2287	0.1342	0.3227	0.0129	0.2649	-0.3607
Efficiency in the remaining production	0.1811	0.1332	-0.0104	-0.3869	-0.0587	0.3608
Indirect costs	0.2728	0.0548	-0.0258	-0.3075	0.0758	0.4884
Time for new product development	0.2248	0.4809	-0.0278	0.1744	0.0037	-0.1361
Time for industrialisation	0.2539	0.4876	-0.0546	0.0897	0.1338	-0.0286
Cost for developing new products	0.2417	0.4199	0.1649	0.0812	0.1865	-0.0507
Ability to manage volume changes	0.0889	-0.1047	-0.2669	0.0729	0.6639	-0.1345
Capital tied up	0.2194	-0.0657	0.0354	0.3012	-0.3842	0.3322
Ability to adapt product to customers	0.2386	-0.2069	0.3662	0.3591	0.1579	0.0769
After market service	0.1589	-0.2417	0.4872	0.2657	0.1844	0.2193
Delivery on time	0.2744	-0.3053	-0.1955	0.1441	0.1222	-0.2163

Table 5.3.1.2: Sweden-efficiency-principal components analysis

From table 5.3.1.2, firstly, it can be summarized that component 1 is a general index which is applicable for all companies' outsourcing to indicate the degree of outsourcing effect. And the value is more or less around $\sqrt{1/16} = 0.25$.

The greatest value of component 2 concentrate on factors of Time for new product development，Time for industrialization，and Cost for developing new products. This suggests that outsourcing indeed drives companies to innovate on its production and realize the industrialization of new products, and reduces the costs for new products at the same time. Negative values are for the factors of Control over costs，Ability to adapt product to customers，After market service，and Delivery on time. This suggests that companies will control their costs and meet customers' needs and services. However, it is not an ideal effect.

The greatest values of component 3 concentrate on factors of New functionality in the outsourced product，After market service，and Ability to adapt product to customers. This indicates the stress on after sale services and new functions of products to meet customers' needs. The negative values are Production lead time，Lead time order to delivery，and Ability to manage volume changes. This is an indication of the time adjustment for store of products.

The greatest values of component 4 concentrate on factors of Capital tied up ，Ability to adapt product to customers，and After market service. This suggests motive for outsourcing is to avoid investment cost frozen; meet customers' needs and services. Component 1 and 3 are coherent. The negative values are of factors on Cost of outsourced component，Control over costs，Efficiency in the remaining production，and Indirect costs. This indicates the problem of companies' control on costs.

Positive value of component 5 is Ability to manage volume changes, which is 0.6639，far more than others. It indicates that outsourcing helps realize the effective

management on company volume. Negative values are of factors on Quality, and Capital tied up.

The positive values of factors in component 6 are Efficiency in the remaining production，Indirect costs，and Capital tied up，which indicates that outsourcing helps companies effectively increase the efficiency of remaining production, reduce the indirect costs and increases the flexibility of investment costs. The negative values are of factors on quality，and New functionality in the outsourced product.

Generally speaking, among those 6 components, it can be found that for Swedish companies, component 1 is a general index for all companies' outsourcing degree. Component 2 is for new products design and production, the realization of industrialization and reduction on costs of new products. Component 3 is for after marketing services, improvement of adjustment to customers' needs, and new functions of products. Component 4 is to avoid costs frozen, and meets customers' needs and services. Component 5 stresses Ability to manage volume changes. And component 6 stresses that outsourcing directly realizes the efficiency of remaining production, reduction on indirect costs, and the flexibility of costs.

5.3.2 China group

Based on previous method, the parallel study for Chinese companies outsourcing is done in this chapter. Table 5.3.2.1 presents the result by using stata software.

component	eigenvalue	difference	proportion	cumulative
Comp1	3.09	0.63	0.1934	0.1934
Comp2	2.46	0.15	0.1540	0.3474
Comp3	2.31	0.84	0.1446	0.4920
Comp4	1.47	0.09	0.0924	0.5844
Comp5	1.39	0.26	0.0868	0.6712
Comp6	1.13	0.06	0.0704	0.7416

Comp7	1.07	0.30	0.0670	0.8086
Comp8	0.76	0.07	0.0480	0.8565
Comp9	0.69	0.16	0.0434	0.9000
Comp10	0.53	0.11	0.0333	0.9333
Comp11	0.41	0.15	0.0260	0.9593
Comp12	0.27	0.09	0.0167	0.9761
Comp13	0.17	0.06	0.0112	0.9872
Comp14	0.11	0.06	0.0071	0.9943
Comp15	0.05	0.01	0.0032	0.9975
Comp16	0.04		0.0025	1.0000

Table 5.3.2.1 China-efficiency-eigenvalue

The rate of component 1 occupies 19.34% and the first five components occupy 67.12% which is close to 2/3. However other components occupy not too much. The smallest is 0.04 which it is close to 0. This means there might be linear relationship.

Factor	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6
Cost of outsourced component	-0.1028	-0.3103	0.1475	-0.1829	0.4149	0.0498
Control over costs	0.4008	-0.0123	-0.0367	0.1019	0.1723	-0.2488
Quality	0.1340	0.1624	0.3864	-0.4070	0.0714	0.2058
Production lead time	0.2678	0.2869	0.1079	-0.2675	0.0902	0.2787
Lead time order to delivery	-0.0646	0.1729	0.0267	0.1251	-0.2176	-0.6505
New functionality in the outsourced product	0.0331	0.3246	0.2799	0.2869	0.0172	0.1886
Efficiency in the remaining production	-0.2115	0.4805	0.0112	-0.1309	0.2351	-0.0028
Indirect costs	0.3875	-0.0399	-0.0080	-0.2210	0.3694	-0.3968
Time for new product development	0.3507	0.0909	0.2954	0.3208	0.1475	-0.0308
Time for industrialisation	0.3631	-0.2913	0.0787	-0.0947	-0.4210	-0.0784
Cost for developing new products	0.1361	0.2677	0.2708	-0.0453	-0.5390	0.0975
Ability to manage volume changes	0.0596	-0.2243	0.5128	0.2975	0.0070	0.1855
Capital tied up	-0.1516	0.1858	0.3496	0.5110	0.2108	-0.0356
Ability to adapt product to customers	0.2823	-0.1923	-0.2514	0.2735	0.0969	0.2357
After market service	0.2573	0.0452	-0.3410	0.1287	-0.0138	0.2917
Delivery on time	0.3053	0.3722	-0.7277	0.0016	0.0460	-0.0805

Table 5.3.2.2: China-efficiency-principal components analysis

From table above, it can be summarized: There are both positive values and negative values in component 1. However, only four factors are negative, and the others are positive. Component 1 is a general index which indicates the general degree of outsourcing effect.

The positive values of component 2 are Efficiency in the remaining production，and Delivery on time. This indicates that outsourcing could realize the production efficiency and abundant time for product distribution. Negative values are Cost of outsourced component，and Time for new product development, which indicates outsourcing can not realize the costs or fasten the new product design.

The positive value in component 3 is Ability to manage volume changes，which is indicative for the fact that outsourcing is helpful for companies' quantity management. The negative values are New functionality in the outsourced product，Ability to adapt product to customers，and After market service. Those three factors are reflections of outsourcing are not effective on realizing the new functions of products or meet customers' needs or after marketing services.

The positive value of component 4 is Capital tied up, which means that outsourcing helps the costs become more flexible, and a low possibility of costs frozen. Negative value is quality，which means outsourcing is not a guarantee of product quality.
The positive values of component 5 are Cost of outsourced component，and Indirect costs，which are reflections of the fact that outsourcing can reduce the indirect costs for companies. Negative values are Time for industrialization，and Cost for developing new products，which means outsourcing is not good for industrialization, and increases costs for design of new products.

The negative value of component 6 is Lead time order to delivery，which a is very obvious evidence that outsourcing can not make sure abundant time for delivery.

6. Discussions

According to Carmen Díaz-Mora et.al(2008). business press and academic literature have increasingly deal with outsourcing of production activities, but empirical research about its determinants remains very limited: Kimura (2001) and Tomiura (2004) for Japanese manufacturing industry, Görg and Hanley (2004) for Irish electronics industry, Girma and Görg (2004) for some UK manufacturing industries, Holl (2004) and Díaz-Mora ect(2008)for Spanish manufacturing industry. Our study belongs to empirical study, what's more, we make a comparison between two different country and try to find whether the motivates and effects of outsourcing in different countries are some or not.

Based on our survey data and the study of chapter 5 on the motives for outsourcing between Swedish companies and Chinese companies, this article try to find which motivates affect the outsourcing, which effects is relative important and whether the same factor play a simlilar role in different countries or not.

6.1 Similarities and differences on outsourcing motives

According to transaction cost theory,[1] outsourcing would entail a variety of coordination costs associated with various aspects of inter-firm transactions. Firms which outsource production search to obtain two types of advantages: first, an increase of flexibility for adapting to changes in demand and technological conditions and, second, a reduction in production costs

The cost savings derived from outsourcing can be obtained by two ways: first, exploiting the economies of scale in producing these specialized components or phases which are being contracted out (outsourcing for specialization) and, second,

[1] Coase, 1937; Williamson, 1975

turning fixed costs in variable costs and gaining flexibility if there are frequents fluctuations in the product demand (outsourcing for capacity).[1]

As it has been proved in chapter 5, both one-way and two-way anova show that every company has its motives for outsourcing, some of their motives are the same while some are not. The similarities and differences in motives and characteristics have been shown. In this chapter, there will be reasonable explanation of the phenomenon discussed in chapter 5.

Firstly, the motives are the same. From one-way anova, there are 3 classifications of means values. When means > 3, the factors of motives will be Decrease costs，Free resources for other investments ，and More clear production flow. (2）when means = 3，the factors of motives are Reduce fixed costs，Reduce investments，and Lack of capacity. （3）when means < 3，the factors of motives are Increase control over costs，Access to competence，Increase product quality，and Benefit from supplier innovation capability. Those factors of motives are the same for Swedish companies and Chinese companies. Those motives indicate the similarities in outsourcing, (1) reduce the costs both costs and investment costs; (2) make sure the flexibility for costs and smooth the production process, thus improve the competitiveness; (3) increase the quality and make profits from outsourcing.

Secondly, there are also differences in motives. Such as Capital from selling the production unit，Risk spreading，Faster introduction of products (reduce TTM)，Lower development costs，Hard to control the business，Increase focus，and Increase volume flexibility. For Chinese companies, except from the motives of Increase focus and Increase volume flexibility, other motives are stronger than that of Swedish companies. This means that Chinese companies look much more for gaining the abilities of outsourcing, and avoiding risks and increasing production of new products, even increasing the product flow chains. However Swedish companies pay much

[1] Abraham and Taylor 1996

attention on increase in the enterprise's core competitiveness and flexibility of product inventory management. The main reason for the difference is that there is more processing industry in China, and the market monopoly power is weak. The competition is violent and the profit is quite difficult to be gained. Meanwhile Swedish enterprises are more mature market environment, companies' development rely much on core competitiveness. The difference is due to the level of national development and maturity of market development.

At the same time, the principal components can be compared. Table 6.1.1 shows the main components.

Comp	Sweden	China
Comp1	Aggregative indicator	Reduce investments，Increase product quality ，Lower development costs，Lack of capacity
Comp2	Decrease costs， Reduce fixed costs, Increase control over costs， Reduce investments	Risk spreading，Capital from selling the production unit，Access to competence，Increase focus，Free resources for other investments
Comp3	Increase volume flexibility，Lack of capacity，More clear production flow	Increase product quality, innovation capability, Lower development costs, More clear production flow
Comp4	Increase control over costs ，Reduce fixed costs ，Capital from selling the production unit，Risk spreading，Hard to control the business，Lack of capacity。	Capital from selling the production unit，
Comp5	Reduce fixed costs，Reduce investments ，Access to competence，Lack of capacity	Increase control over costs，Access to competence，increase volume flexibility

Table 6.1.1: Comparison of principal components

According to the comparison, it can be summarized that Swedish companies much more attention on the control of costs and management of the company while Chinese companies pay more on reducing investment, increasing production quality, reducing costs on new product, achieving low risks and improving the ability of gaining profits and competitiveness.

6.2 Similarities and differences on outsourcing effects

As it has been mentioned in chapter 5, every outsourcing would show its effect of the results. Some of the results can be achieved while some are not. And some of the effects are satisfactory while some are not. This chapter the discussion will focus on the effect of Swedish and Chinese companies outsourcing.

Firstly, if the effects of Swedish companies are the same as Chinese companies, there might be three situations. (1) both effects are satisfactory, and means > 0. The factors of motives are Cost of outsourced component，New functionality in the outsourced product，Efficiency in the remaining production，Efficiency in the remaining production, Ability to manage volume changes ，and Capital tied up.（2）both parties do not receive any effective results, and means =0. The factors are Quality，Lead time order to delivery，After market service，and Delivery on time.（3）both parties are not satisfactory on the effect, and means < 3. There is no such factor.

The same effects of Swedish and Chinese companies indicate the similarities of (1) both of the companies want to reduce costs; (2) both companies want to enhance the management of costs, realize the flexibility of investment, smooth the production procedure, and gain competitiveness; (3) both want to increase the quality of products and increase functions of products.

Secondly, there are differences in motives on Control over costs，Production lead time，Time for new product development，Cost for developing new products，and

Ability to adapt product to customers. Chinese companies generally could realize a good effect. This means that Chinese companies could realize the reduction of costs, make sure of abundant time for logistic and delivery, and improvement of the after marketing services. However Swedish companies can not get as good effect as Chinese do. Although Chinese market is not mature, enterprises are still in the development process, the necessary time to ensure that the logistics to improve service, control production costs, in order to achieve the development and expansion of enterprises. And Sweden in after-sales service, logistics process is relatively complete maturity, the maturity of its market close.

Comp	Sweden	China
Comp1	Aggregative indicator	Aggregative indicator
Comp2	Time for new product development，Time for industrialisation，Cost for developing new products	Efficiency in the remaining production，Delivery on time
Comp3	New functionality in the outsourced product，After market service，Ability to adapt product to customers	Ability to manage volume changes
Comp4	Capital tied up ，Ability to adapt product to customers，After market service。	Capital tied up
Comp5	Ability to manage volume changes	Cost of outsourced component，Indirect costs
Comp6	Ability to manage volume changes	No obbious

Table 6.2.1 Comparison of principal components

According to the comparison, we can see that outsourcing enterprises in Sweden compared the effect of satisfaction with the development of new products and put into production, new product features and the corresponding after-sales service. The Chinese enterprises are satisfied with the results of the remaining capacity to play, timely delivery, and care for inventory changes in production.

6.3 Further comparison

According to previous analysis, one-way anova, two-way anova and principal components analysis have been used. Those three methods have been used to compare the similarities and differences on motives and effects of outsourcing for Swedish companies and Chinese companies. Two reasons were stressed: one is that the different motivates. The other is that different characteristics of different effects. However, there are still similarities of outsourcing, which will be discussed and explained below. The P values of motives of outsourcing have been shown from tables previously, which will be re-organized into table 6.3.1.

P / Factor	Means		t value	means		
	Sweden	China		>3	!=3	<3
Decrease costs	3.65	3.82	5.28	1	0	0
Increase control over costs	2.46	3.09	-4.05	0	0	1
Reduce fixed costs	2.87	3.09	0.9	0.18	0.36	0.81
Reduce investments	3.16	3.45	1.4	0.41	1.16	0.08
Access to competence	2.22	2.54	-6.42	0	0	1
Increase product quality	1.99	2.45	-8.69	0	0	1
Benefit from supplier innovation capability	1.91	2.27	-9.92	0	0	1
Increase volume flexibility	3.55	4.27	-0.24	0.4	0.81	0.06
More clear production flow	3.4	3.09	2.95	1	0	0
Lack of capacity	2.82	2.31	-1.31	0.09	0.19	0.91

Table 6.3.1: Comparison according to same motivates

Thus, it can be summarized that reasons for outsourcing are the same: (1) Reducing the costs including fixed costs and flexible costs. Control the costs and reduce the investment. (2) Keeping competitive. Get competitiveness through outsourcing and improve product quality and gain the market share, and smooth the logistic management. Those two reasons are exactly the same as what have been mentioned on reduction of transaction costs and core competition. Besides, the similarities on effects are organized into the table 6.3.2 by re-organizing previous tables.

P / Factor	Means		t value	means		
	Sweden	China		>0	!=0	<0
Cost of outsourced component	0.87	1.27	7.29	1	0	0
Quality	0.27	0.9	0.34	0.63	0.74	0.37
Lead time order to delivery	0.02	0.36	0.53	0.7	0.6	0.3
New functionality in the outsourced product	0.01	0.18	1.88	0.96	0.06	0.03
Efficiency in the remaining production	0.77	0.63	9.76	1	0	0
Indirect costs	0.34	0.81	3.86	1	0	0
Time for industrialisation	0.21	0.64	4.05	1	0	0
Ability to adapt product to customers	0.94	1.18	10.51	1	0	0
Capital tied up	0.56	0.73	6.17	1	0	0
After market service	-0.01	0.27	0.29	0.61	0.77	0.38
Delivery on time	0.22	-0.09	1.93	0.97	0.06	0.04

Table 6.3.2: Comparison according to same efficiency

From the analysis, it can be summarized that the effects for outsourcing are the same. (1) Outsourcing guarantees the product supply, product quality, smooth logistic procedure, and realizes the new functions of products. (2) Outsourcing reduces the investment costs, helps companies concentrate on improving its core competitive ability, and improve the new functions of products. Those two points are coherent to previous studies.

6.4 Why there are differences

As mentioned in section 6.1, section 6.2 and section 6.3, some differences exist in the motivation and effects. Why these differences exist?

As discussed in section 6.1, both of them have motives on reducing costs, but the way to reduce cost in two countries is somewhat different. Swedish companies take management into consideration and enhance it, so they are strongly inclined to outsource production. While Chinese companies look forward to gaining profits directly from outsourcing, they are strongly inclined to outsource logistics. Therefore, in order to well understand the different outsourcing methods, the analysis is as follows: (i) different motivations lead to different methods of outsourcing; (ii) the method can (production / logistics) achieve the effects.

At first, let's review the cost-factor difference about the outsource motivates (Table 20), we can notice that Sweden companies focus on the following factors: Decrease costs， Reduce fixed costs, Increase controlling over costs, Reduce investments, etc.. These are mainly involved in production field, the production cost is relative high while its technical content is relative low and the labor force is relatively in shortage. Meanwhile, the rent for factory, the cost for raw material as well as the transportation cost are higher in Sweden than the countries in Asia.

Secondly, Chinese enterprises focus on such factors: Reduce investments，Increase product quality，Lower development costs，Lack of capacity, etc. These factors are mainly involved in production, R&D and logistics fields. Obviously, Chinese enterprises pay attention to more fields. In order to increase product quality, lower development costs, they must keep production process. As far as the Reduced investments and Lack of capacity, they have better item to eliminate the disadvantage.. To our knowledge, in general, they don't have the advantage in the R&D and logistics management unless they are high-tech company or logistics enterprise.

Our initial conclusion is that two countries' companies have motivated to reduce cost, enhance their competition and outsource some business. They choose different outsourcing methods since their motivations are distinct from each other. Swedish companies are strongly inclined to outsource production. While Chinese companies tend to outsource logistics

Thirdly, according to Table 21, the Sweden companies take care for the main effects such as: Time for new product development，Time for industrialization，Cost for developing new products. Obviously, it proves that Swedish companies have reduced cost by outsourcing the production; they have more resources to develop new product and more time for industrialization.

Finally, Chinese companies take care for these effects: Efficiency in the remaining production，Delivery in time. Obliviously, it also proves that Chinese companies have efficiency and can deliver production in time by outsourcing the logistics.
Therefore, Swedish companies are strongly inclined to outsource production while Chinese companies tend to outsource logistics.

7. Conclusions

Before 2000, people paid little attention to the outsourcing in developing country. [1]From then on, many attentions have been paid to these areas and country, including Eastern Europe, Southeast Asia, or Central America and the Caribbean.[2]

Nowadays, anecdotal evidence suggests that it is very important to keep eyes on the differences among countries. As far as existing literature in concerning, there is as of little research on outsourcing among countries. In this article, we have analyzed motivates and effects of outsourcing between China and Sweden by means of Multivariate Statistical Methods.

Our study covers more than 150 companies and we mainly pay our attention to manufacturing industries. By comparison, we observe that some differences exist in the motivation and effects between two countries. Now we summarize our results as follows.

On the one hand, the enterprises of both countries have some motivates, such as reducing fixed costs and flexible costs, controlling the costs and reducing the investment, which cause them to outsource their products or services. As a result of outsourcing, they achieve their goal to some extent. The efforts and investment made in developing in-house manufacturing capability are far more important for improving plant operating performance and innovation capability than outsourcing.[3] Such point of view will also be supported in the special environment of China, where innovation of outsourcing are needed to realize " DESIGN IN CHINA" instead of "MADE IN CHINA" to make China a new member of the supply chain partner.

[1] Feenstra and Hanson 2001
[2] Arvind Virmani 2006
[3] Bengtsson, L. 2008

On the other hand, the motivates have somewhat differences, such as capital from selling the production unit，risk spreading，faster introduction of products, lower development costs，hard to control the business，increasing focus，and increasing volume flexibility，which cause them to outsource different section of production or services. As a result, different motivates and some other factors lead to some of their effects distinguishing from each other.

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Appendix A: Questionnaire for outsourcing

1. Outsourcing manufacturing survey - Questionnaire

Section 1: About the company

F2. Number of employees in your company: _____

Section 5: Outsourcing

F39. Has your company outsourced production of some component/product the past three years?
1=Yes 0=No

F45. How important was the following **motives** for outsourcing production the past three years?

	Decisive Motive				No motive
45a Decrease costs	5	4	3	2	1
45b Increase control over costs	5	4	3	2	1
45c Reduce fixed costs	5	4	3	2	1
45d Reduce investments	5	4	3	2	1
45e Capital from selling the production unit	5	4	3	2	1
45f Risk spreading	5	4	3	2	1
45g Access to competence	5	4	3	2	1
45h Increase product quality	5	4	3	2	1
45i Benefit from supplier innovation capability	5	4	3	2	1
45j Faster introduction of products (reduce TTM)	5	4	3	2	1
45k Lower development costs	5	4	3	2	1
45l Hard to control the business	5	4	3	2	1
45m Increase focus	5	4	3	2	1
45n Free resources for other investments	5	4	3	2	1
45o Increase volume flexibility	5	4	3	2	1
45p More clear production flow	5	4	3	2	1
45q Lack of capacity	5	4	3	2	1

F46. What was the effect of outsourcing?

	Much better			No diff			Much worse
aCost of outsourced component	+3	+2	+1	0	-1	-2	-3
bControl over costs	+3	+2	+1	0	-1	-2	-3
cQuality	+3	+2	+1	0	-1	-2	-3
dProduction lead time	+3	+2	+1	0	-1	-2	-3
eLead time order to delivery	+3	+2	+1	0	-1	-2	-3
fNew functionality in the outsourced product	+3	+2	+1	0	-1	-2	-3
gEfficiency in the remaining production	+3	+2	+1	0	-1	-2	-3
hIndirect costs	+3	+2	+1	0	-1	-2	-3
iTime for new product development	+3	+2	+1	0	-1	-2	-3
jTime for industrialisation	+3	+2	+1	0	-1	-2	-3
kCost for developing new products	+3	+2	+1	0	-1	-2	-3
lAbility to manage volume changes	+3	+2	+1	0	-1	-2	-3
mCapital tied up	+3	+2	+1	0	-1	-2	-3
nAbility to adapt product to customers	+3	+2	+1	0	-1	-2	-3
oAfter market service	+3	+2	+1	0	-1	-2	-3
pDelivery on time	+3	+2	+1	0	-1	-2	-3

Appendix B: Survey Database

1. Sweden Outsourcing Motives

	Decrease costs	Increase control over costs	Reduce fixed costs	Reduce investments	Capital from selling the production unit	Risk spreading	Access to competence	Increase product quality	Benefit from supplier innovation capability	Faster introduction of products (reduce TTM)	Lower development costs	Hard to control the business	Increase focus	Free resources for other investments	Increase volume flexibility	More clear production flow	Lack of capacity
HÅRD METALLKROPPAR	1.00	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00	4.00	5.00	5.00
Dränkbara pumpar	3.00	3.00	3.00	4.00	4.00	4.00	5.00	4.00	5.00	4.00	3.00	3.00	3.00	4.00	3.00	3.00	1.00
REGLERPRODUKTER	4.00	3.00	2.00	4.00	1.00	3.00	4.00	4.00	4.00	2.00	1.00	1.00	5.00	3.00	1.00	5.00	1.00
VENTILSTÄLLDON	5.00	3.00	4.00	3.00	3.00	4.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	3.00	4.00	2.00	2.00
Verktygs- och fixtursystem	5.00	4.00	4.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	4.00	3.00	5.00	2.00
DRYCKESBURK I ALUMINIUM	4.00	3.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00	3.00	2.00	2.00	4.00	4.00	4.00	4.00
Vindkraftstorn	3.00	1.00	1.00	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00	1.00	2.00	3.00
HOMOGENISATORER	4.00	4.00	3.00	4.00	1.00	4.00	4.00	4.00	2.00	2.00	4.00	1.00	4.00	3.00	5.00	5.00	2.00
KARTONGFÖRPACKNINGS	4.00	1.00	3.00	3.00	1.00	1.00	3.00	1.00	4.00	2.00	4.00	1.00	4.00	4.00	3.00	1.00	2.00

SYSTEM																	
Infusionsprodukter f sjukvård	4.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	1.00	1.00	4.00	4.00	1.00	1.00	1.00
Pressverktyg för bilindustrin	5.00	5.00	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	5.00	2.00	1.00	5.00
VERKTYG FÖR PLÅTFORMNING	5.00	5.00	5.00	5.00	1.00	4.00	4.00	3.00	2.00	3.00	3.00	4.00	5.00	5.00	5.00	5.00	4.00
TVÅVÄGSFORDON FÖR JÄRNVÄGSUH	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00
ALUMINIUMFASADER DÖRR TAK FÖNS	4.00	1.00	1.00	4.00	1.00	1.00	1.00	3.00	2.00	1.00	1.00	1.00	4.00	2.00	5.00	3.00	3.00
MOBILTELEFONER PlASTPRODUKTER	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	3.00	1.00	5.00	1.00
LINJÄRA STÄLLDON	2.00	2.00	5.00	5.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	4.00	4.00	1.00	2.00	3.00
UTERUM	2.00	3.00	3.00	3.00	2.00	2.00	3.00	2.00	2.00	3.00	2.00	3.00	4.00	5.00	4.00	5.00	5.00

STERILISATIONSUTRUSTNING	5.00	1.00	4.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	4.00	4.00	1.00
Plastkvarnar	4.00	3.00	2.00	2.00	2.00	2.00	3.00	3.00	2.00	3.00	2.00	4.00	5.00	5.00	3.00	4.00	3.00
Ställdon och reglerventiler			4.00	4.00	1.00	1.00	4.00	4.00	4.00	4.00	4.00	3.00	3.00	4.00	4.00	5.00	3.00
Takräcken för bilar o tillbehö	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lysrörsarmaturer	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		5.00	1.00	1.00	5.00	5.00	1.00	5.00	1.00
PLÅTDETALJ FÖR TELEKOM	3.00	4.00	3.00	3.00	3.00	4.00	4.00	4.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	5.00	2.00
Slangtätningslösningar	4.00	4.00	3.00	4.00	3.00	2.00	2.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	4.00	2.00
ELEKTRISKT INSTALLATIONSMATR	5.00	3.00	3.00	2.00	2.00	2.00	3.00	1.00	1.00	1.00	1.00	2.00	2.00	4.00	3.00	4.00	4.00
REACHSTACKERS	3.00	2.00	3.00	5.00	1.00	3.00	2.00	3.00	2.00	1.00	1.00	1.00	4.00	3.00	5.00	4.00	4.00
Packningsutrustning	4.00	3.00	2.00	4.00	3.00	1.00	2.00	4.00	4.00	2.00	2.00	2.00	2.00	4.00	1.00	4.00	4.00
GAFFELTRUCKAR	5.00	1.00	4.00	2.00	1.00	1.00	1.00	1.00	3.00	2.00	1.00	1.00	4.00	4.00	1.00	4.00	2.00
TEXTILTVÄTTMASKINER FÖR	4.00	3.00	4.00	5.00	2.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	3.00	4.00	4.00	2.00

PROFFS																	
TRUCKAR	4.00	4.00	3.00	4.00	2.00	2.00	4.00	4.00	2.00	2.00	2.00	2.00	2.00	4.00	4.00	4.00	4.00
vENTILATIONSAGGREGAT	4.00	2.00	4.00	4.00	1.00	1.00	4.00	5.00	1.00	1.00	4.00	1.00	5.00	1.00	1.00	5.00	1.00
Avloppspump	4.00	3.00	4.00	4.00	1.00	4.00	4.00	3.00	3.00	3.00	2.00	1.00	2.00	4.00	4.00	4.00	4.00
FARTYG	4.00	3.00	4.00	5.00	2.00	3.00	2.00	4.00	4.00	2.00	4.00	3.00	2.00	5.00	3.00	4.00	2.00
Tåg	4.00	4.00	4.00	4.00	2.00	2.00	4.00	1.00	3.00	1.00	2.00	1.00	4.00	1.00	2.00	1.00	1.00
KAMERASYSTEM	5.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00	1.00	2.00	5.00
TRYCKKÄRL	4.00	3.00	4.00	4.00	4.00	3.00	4.00	3.00	3.00	3.00	3.00	2.00	3.00	4.00	3.00	3.00	2.00
Lastbilar	5.00	3.00	2.00	5.00	1.00	1.00	4.00	3.00	2.00	1.00	1.00	1.00	4.00	5.00	3.00	5.00	1.00
SPANJOLETT	4.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	4.00	5.00	5.00	3.00	2.00
MÄRKUTRUSTNING	5.00	2.00	4.00	2.00	1.00	1.00	4.00	2.00	2.00	1.00	1.00	1.00	3.00	3.00	3.00	4.00	4.00
Industripumpar	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.00	4.00	2.00	5.00
MEDICINTEKNISKA PRODUKTER	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	3.00	1.00	5.00
Datorer	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00	1.00	1.00	1.00
Kolvringar t. stora fartygmoto	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00	5.00	5.00	5.00	1.00
ANDNINGSHJ	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

ÄLPMEDEL APPARATER																	
STRÖMRIKTARE	4.00	1.00	1.00	5.00	1.00	1.00	1.00	1.00	1.00	4.00	1.00	1.00	1.00	5.00	5.00	1.00	5.00
VEVAXEL TILL KEDJEMOTORSÅG	5.00	1.00	1.00	5.00	1.00	1.00	4.00	4.00	4.00	1.00	1.00	1.00	1.00	5.00	1.00	5.00	1.00
PERSONBILAR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	4.00	1.00	1.00	4.00
LINDNINGSTRÅD TILL ELEKTROIND	4.00	2.00	1.00	2.00	1.00	1.00	3.00	1.00	1.00	1.00	1.00	1.00	4.00	5.00	4.00	5.00	5.00
Segelbåtar	1.00	1.00	1.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	3.00	2.00	5.00
Svetsade trådarticklar	4.00	3.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	3.00	3.00	2.00
Kabel för eldistr och telekom	5.00	1.00	3.00	3.00	3.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	4.00	4.00	3.00
LASTBILSFLAK	4.00	1.00	4.00	4.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	1.00	1.00	1.00	3.00	4.00
Garnmatare	1.00	1.00	1.00	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00
Drivlina för personbilar b/d	1.00	3.00	4.00	4.00	3.00	2.00	1.00	1.00	1.00	4.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00
Dieselmotorer	5.00	3.00	4.00	4.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	3.00	4.00	3.00

KYLSKÅP FRYSAR	5.00	5.00	3.00	5.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00	4.00	5.00	5.00	5.00	5.00	2.00
PNEUMATISKA HÄFTVERKTYG FÖRBRU	5.00	5.00	5.00	1.00	1.00	1.00	3.00	3.00	3.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Glasögonbågar	2.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	3.00	4.00	3.00	3.00	1.00	3.00	5.00	1.00	3.00
Skjutdörrar	5.00	1.00	1.00	3.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	4.00	4.00	4.00	3.00
BELYSNiNGSARMATURER	5.00	4.00	1.00	2.00	1.00	3.00	3.00	1.00	2.00	2.00	1.00	2.00	3.00	3.00	4.00	4.00	3.00
BELYSNINGSPRODUKTER	4.00	4.00	2.00	3.00	1.00	3.00	2.00	3.00	3.00	1.00	1.00	3.00	4.00	4.00	2.00	4.00	1.00
KABEL	1.00	1.00	2.00	2.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	3.00	5.00	1.00	3.00	4.00
LASTBILSHYTTER	5.00	3.00	5.00	1.00	1.00	4.00	5.00	5.00	2.00	5.00	1.00	4.00	4.00	5.00	4.00	4.00	4.00
Välmepumpar	1.00	1.00	1.00	4.00	1.00	1.00	4.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	5.00	3.00	5.00
KOMPRIMATORER FÖR AVFALLSHANT	5.00	5.00	3.00	2.00	1.00	1.00	2.00	1.00	3.00	1.00	4.00	3.00	4.00	4.00	4.00	5.00	3.00
Spik	4.00	4.00	4.00	4.00	1.00	2.00	4.00	3.00	4.00	3.00	4.00	3.00	4.00	4.00	4.00	5.00	4.00
PLOGSÅMAS	5.00	5.00	5.00	5.00	3.00	3.00	3.00	2.00	2.00	2.00	4.00	4.00	5.00	5.00	5.00	5.00	2.00

KINER SPREDARE																	
Elektronik	3.00	3.00	5.00	5.00	2.00	4.00	5.00	3.00	3.00	3.00	3.00	4.00	5.00	2.00	5.00	5.00	2.00
Absorbtionskylskåp	3.00	3.00	3.00	4.00	4.00	4.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	4.00	4.00	3.00	4.00
KLIMATANLÄGGNING TILL FORDON	3.00	3.00	5.00	5.00	1.00	4.00	5.00	1.00	4.00	1.00	1.00	1.00	1.00	5.00	4.00	5.00	5.00
Trappor	5.00	1.00	5.00	5.00	1.00	1.00	3.00	1.00	1.00	1.00	1.00	1.00	5.00	5.00	4.00	5.00	1.00
INDUSTRIELLA ANSLUTNINGSDON	5.00	1.00	5.00	4.00	1.00	4.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	5.00	1.00	1.00
LÅSCYLINDRAR	5.00	1.00	1.00	4.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	3.00	1.00
Transmissioner och axlar	3.00	3.00	5.00	4.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	5.00	2.00	2.00	3.00	2.00
Stadsbusskarosser	5.00	1.00	3.00	3.00	1.00	1.00	4.00	3.00	3.00	1.00	1.00	1.00	3.00	3.00	3.00	3.00	2.00
PAPPERSMASKINER	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	5.00	5.00	5.00
VENTILER FÖR PROCESSINDUSTRIN	3.00	3.00	4.00	4.00	1.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	3.00	5.00	4.00	2.00

ANALYSINSTRUMENT FÖR MASSA IND.	5.00	3.00	3.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	4.00	4.00	4.00	4.00
Hjullastare	2.00	4.00	4.00	5.00	2.00	3.00	3.00	4.00	3.00	3.00	3.00	3.00	4.00	4.00	3.00	5.00	2.00
KOMPONENTER TILL FORDONSINDUST	4.00													4.00	4.00		
Bandsågsblad	3.00	2.00	4.00	4.00	2.00	4.00	3.00	2.00	4.00	2.00	2.00	2.00	4.00	4.00	4.00	4.00	2.00
Försvarsmateriel	4.00	3.00	4.00	4.00	1.00	4.00	2.00	2.00	1.00	2.00	2.00	2.00	3.00	4.00	5.00	3.00	4.00
SPECIALFORDON LASTBILAR	4.00	4.00	2.00	4.00	1.00	3.00	4.00	5.00	4.00	2.00	2.00	4.00	5.00	5.00	5.00	5.00	4.00
INLINE MASKINER	2.00	4.00	4.00	1.00	1.00	5.00	2.00	2.00	2.00	1.00	1.00	4.00	4.00	1.00	5.00	3.00	4.00
FORDONSELEKTRONIK	2.00	2.00	5.00	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00	5.00	2.00	4.00	2.00
Diamantverktyg	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	4.00	4.00	3.00	1.00
Elmototer och generatorer	5.00	3.00	4.00	4.00	1.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	3.00	4.00	4.00	3.00	2.00
ELMOTORER	5.00	1.00	4.00	4.00	3.00	1.00	4.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Likströmsmot	5.00	2.00	5.00	5.00	2.00	3.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	3.00	3.00	3.00	3.00

orer																	
Transmissonsprodukter	1.00	1.00	1.00	1.00	1.00	1.00	4.00	3.00	5.00	5.00	5.00	3.00	4.00	5.00	5.00	5.00	3.00
Växellådor för lastbilar	5.00	5.00	3.00	3.00	3.00	3.00	2.00	1.00	2.00	1.00	1.00	2.00	1.00	4.00	4.00	4.00	3.00
FRÄSVERKTYG OCH SVARVVERKTYG	1.00	1.00	1.00	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00
BERGBORRPRODUKTER	5.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	1.00	4.00	1.00
VENTLATIONS PRODUKTER	1.00	2.00	5.00	5.00	1.00	1.00	2.00	3.00	1.00	1.00	1.00	1.00	3.00	3.00	1.00	3.00	2.00
VERKTYG	5.00	5.00	5.00	5.00	1.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
INSLIPNING AV OPTIK I GLASÖGON	4.00	3.00	3.00	3.00	4.00	3.00	3.00	4.00	2.00	3.00	3.00	4.00	2.00	3.00	3.00	2.00	3.00
ENERGIKABEL	5.00	1.00	1.00	2.00	1.00	3.00	4.00	4.00	3.00		1.00			5.00		4.00	5.00
Automatkoppel till tåq f Persn	4.00	3.00	4.00	3.00	1.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	3.00	4.00	5.00	3.00	5.00
HANDVERKTYG	4.00		4.00	4.00	1.00	1.00	1.00	1.00	4.00	2.00	1.00	3.00	5.00	3.00	4.00	4.00	1.00
Låg o mellans	2.00	4.00	5.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	3.00	5.00	4.00	5.00	5.00

pänningsställverk																	
Bergborrprodukter	4.00	3.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	5.00	3.00	5.00
Elektriska lindningar	1.00	2.00	2.00	5.00	1.00	3.00	2.00	1.00	1.00	1.00	1.00	2.00	3.00	2.00	5.00	1.00	5.00
KABEL	5.00	3.00	4.00	4.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	4.00	3.00	5.00	2.00
VENTILATIONSDETALJER	5.00	3.00	3.00	4.00	1.00	4.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	4.00	3.00	3.00
ÅPPARATSKÅP	5.00	4.00	4.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	2.00	1.00	4.00	1.00	1.00
GLASBÄRANDE KONSTRUKTIONER	4.00	4.00	4.00	4.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00	4.00	4.00	4.00	4.00	4.00
MILITÄRA FORDON	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	3.00	4.00	3.00	2.00
Laboratorieinstrument	3.00	3.00	5.00	5.00	2.00	4.00	2.00	2.00	1.00	1.00	1.00	1.00	5.00	3.00	5.00	5.00	2.00
SKOGSMASKINER	4.00	4.00	2.00	5.00	1.00	1.00	5.00	5.00	4.00	1.00	4.00	1.00	1.00	5.00	1.00	5.00	5.00
Band t. skogsmask. o slitstål	3.00	1.00	4.00	5.00	2.00	1.00	4.00	4.00	4.00	4.00	1.00	1.00	5.00	5.00	2.00	5.00	1.00
Skogskranar	5.00	4.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	3.00	4.00	5.00	2.00

Mean	3.65	2.46	2.87	3.16	1.50	1.96	2.23	1.99	1.92	1.72	1.66	1.73	2.83	3.55	3.17	3.40	2.83

2. China Outsourcing Motives

	decresae costs	Increase control over costs	Reduce fixed costs	Reduce investments	Capital from selling the production unit	Risk spreading	Access to competence	Increase product quality	Benefit from supplier innovation capability	Faster introduction of products (reduce TTM)	Lower development costs	Hard to control the business	Increase focus	Free resources for other investments	Increase volume flexibility	More clear production flow	Lack of capacity
QDY	4	3	2	1	2	5	2	2	5	5	1	5	5	5	4	3	3
SS	5	2	3	2	3	2	2	2	1	4	1	2	3	5	5	3	1
MTS	3	2	3	5	5	3	4	3	1	3	3	4	5	5	2	2	5
Hr	4	3	4	3	3	2	1	1	4	2	2	5	5	4	4	4	1
Xi	3	3	4	4	2	3	3	3	2	3	5	5	3	3	5	3	5
HQT	3	4	1	1	4	3	2	2	4	3	2	2	3	4	4	3	2
RXJX	3	4	3	4	2	2	3	3	2	3	4	2	5	5	5	4	2
XYDZ	5	4	4	4	2	3	3	3	1	3	2	4	4	3	5	3	3
YKQ	5	3	3	5	3	3	3	3	1	4	3	5	5	5	5	3	4
LJ	4	3	3	5	4	3	3	3	2	3	4	5	5	4	4	3	3
GDDA	3	3	4	4	3	3	2	2	2	4	4	3	4	4	4	3	2
YU	3	3	3	1	2	4	2	3	5	5	5	5	5	4	4	3	2
QY	4	2	4	1	3	3	2	3	1	4	4	5	5	5	4	3	3
MUN	2	2	4	2	3	3	1	3	2	2	4	4	4	3	5	4	3
GM	5	2	4	3	3	4	4	2	4	3	3	3	4	3	5	4	3
BX	3	3	3	2	2	4	3	1	1	4	2	3	4	3	5	2	4
PXNU	5	4	3	2	4	4	3	2	5	3	2	3	3	4	3	4	2
WBD	3	2	2	2	2	5	3	2	1	4	1	4	4	4	3	4	2
NG	4	3	3	4	2	2	1	2	1	4	1	5	3	5	4	2	5
PQL	3	3	5	1	1	3	2	1	2	2	2	4	3	5	4	3	4
FG	3	3	3	5	1	3	2	3	2	5	4	3	5	3	5	3	5

3. Sweden Outsourcing Effects

	Cost of outsourced component	Control over costs	Quality	Production lead time	Lead time order to delivery	New functionality in the outsourced product	Efficiency in the remaining production	Indirect costs	Time for new product development	Time for industrialisation	Cost for developing new products	Ability to manage volume changes	Capital tied up	Ability to adapt product to customers	After market service	Delivery on time
HÅRDMETALLKROPPAR	1	0	0	-1	0	0	1	0	0	0	0	2	0	0	0	0
Dränkbara pumpar	0	0	1	0	-1	1	0	0	0	0	2	0	2	0	0	-2
REGLERPRODUKTER	2	0	-1	0	0	0	2	2	0	0	0	0	2	0	0	0
VENTILSTÄLLDON	2	1	-1	-1	-1	-3	0	1	0	0	0	1	-1	0	0	1
Verktygs- och fixtursystem	2	2	1	1	0	0	2	3	0	0	0	0	2	0	0	0
DRYCKESBURKI ALUMINIUM	2	2	0	1	0	0	0	1	0	0	0	2	1	1	1	1
Vindkraftstorn	-1	0	-1	0	0	0	-1	-1	-1	0	-1	0	1	0	0	-1
HOMOGENISATORER	1	2	0	2	2	0	2	2	2	2	2	3	2	0	0	0
KARTONGFÖRPACKNINGSSYSTEM	1	0	0	1	1	0	0	2	3	3	1	0	1	0	0	0
Infusionsprodukter f sjukvård	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1
Pressverktyg för bilindustrin	1	0	0	1	0	-1	0	0	0	0	0	1	0	0	0	1

VERKTYG FÖR PLÅTFORMNING	2	2	2	2	0	0	0	2	0	0	0	2	2	0	0	0
TVÅVÄGSFORDON FÖR JÄRNVÄGSUH	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
ALUMINIUMFASADER DÖRR TAK FÖNS	2	0	1	1	0	0	0	0	0	0	0	3	1	1	0	2
MOBIL TELEFONER PlASTPRODUKTER	1	1	0	1	0	0	1	1	-1	0	0	0	2	0	0	2
LINJÄRA STÄLLDON	-1	-1	0	0	0	0	1	1	0	0	-1	0	2	0	0	0
UTERUM	0	1	0	2	2	0	2	1	1	2	0	2	2	2	0	3
STERILISATION SUTRUSTNING	1	1	0	-2	-1	0	-1	-1	0	0	0	-1	1	-2	0	1
Plastkvarnar	2	1	1	1	0	0	1	1	1	0	0	0	1	0	0	0
Ställdon och reglerventiler	2	0	2	0	-1	0	0	1	1	0	0	1	1	1	-1	0
Takräcken för bilar o tillbehö	-2	0	2	0	0	0	0	-1	0	0	0	0	0	-1	0	0
Lysrörsarmaturer	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
PLÅTDETALJ FÖR TELEKOM	2	2	2	2	2	2	0	1	2	2	2	2	2	1	1	3
Slangtätningslösningar	2	1	1	2	2	1	2	2	2	1	1	1	2	1	1	2
ELEKTRISKT INSTALLATIONSMATR	3	2	-1	1	2	0	2	1	0	0	0	2	1	-1	0	2
REACH STACKERS	0	0	0	-2	-2	0	0	-1	0	0	0	1	-2	-2	0	0
Packningsutrustning	1	1	2	1	0	2	1	0	0	0	0	0	0	0	1	0

GAFFELTRUCKAR	-1	2	1	1	1	0	1	-1	0	1	0	0	3	0	0	0
TEXTILTVÄTTMASKINER FÖR PROFFS	1	1	-1	-1	-1	0	0	-2	0	0	0	1	1	-1	0	0
TRUCKAR	2	1	2	1	0	2	1	1	-2	-1	-1	1	-2	0	0	1
vENTILATIONSAGGREGAT	1	1	2	0	0	0	1	2	0	0	0	-1	0	0	0	0
Avloppspump	1	1	1	1	0	0	1	0	0	0	1	2	0	0	0	0
FARTYG	3	0	1	-1	-1	0	0	1	1	0	1	0	0	0	0	0
Tåg	0	1	-2	-2	0	0	0	1	0	0	0	0	0	0	0	0
KAMERASYSTEM	3	0	-1	0	0	0	1	1	0	0	0	0	0	0	0	0
TRYCKKÄRL	0	0	-1	0	0	0	0	0	0	0	0	1	1	0	0	0
Lastbilar	3	1	0	-1	-1	0	1	1	0	0	0	0	2	0	0	-1
SPANJOLETT	1	0	0	0	0	0	1	1	2	1	-1	0	-2	-3	-3	-3
MÄRKUTRUSTNING	1	0	0	-1	-1	0	0	1	0	0	0	1	1	-1	0	0
Industripumpar	0	0	0	-1	-1	0	0	0	0	0	0	2	0	0	0	0
MEDICINTEKNISKA PRODUKTER	-1	0	0	-1	-1	0	0	0	0	0	0	1	-1	0	0	2
Datorer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Kolvringar t. stora fartygmoto	0	0	-1	-1	0	0	2	0	0	0	0	2	0	0	0	2
ANDNINGSHJÄLPMEDEL APPARATER	3	0	0	-1	-1	-1	0	-1	0	0	0	1	0	0	0	0
STRÖMRIKTARE	3	2	0	-2	-2	0	3	1	0	2	2	2	-2	-2	0	-2
VEVAXEL TILL KEDJEMOTORSÅG	1	0	0	1	0	0	2	-1	0	0	0	0	0	0	0	0
PERSONBILAR	0	0	0	-1	1	0	0	-1	0	0	0	1	0	1	0	0

LINDNINGSTRÅD TILL ELEKTROIND	-1	0	-2	-2	-2	0	2	-2	1	1	0	1	-1	0	0	-1
Segelbåtar	-2	0	-1	-1	-1	0	2	0	0	0	0	1	-1	0	0	-1
Svetsade trådartiklar	1	1	0	1	1	0	1	0	0	0	0	1	0	0	0	0
Kabel för eldistr och telekom	2	-1	-2	-1	1	0	0	1	2	1	1	1	1	0	0	-1
LASTBILSFLAK	-2	-1	0	-2	0	0	0	0	0	-1	0	0	0	0	0	-2
Garnmatare	-3	-3	-3	-3	0	0	0	-3	0	0	0	3	0	0	0	-3
Drivlina för personbilar b/d	0	-1	0	0	0	0	0	-1	1	0	0	0	1	0	0	0
Dieselmotorer	1	1	0	-1	-1	0	0	-1	0	0	0	0	1	0	0	0
KYLSKÅP FRYSAR	2	3	0	0	0	0	2	2	0	0	0	2	0	0	0	0
PNEUMATISKA HÄFTVERKTYG FÖRBRU	3	3	2	-1	-1	2	-1	0	2	0	0	0	2	2	0	0
Glasögonbågar	-1	-1	-1	-1	0	0	0	0	0	0	0	2	-1	0	0	0
Skjutdörrar	3	0	0	0	0	0	1	0	0	0	0	1	-1	0	0	0
BELYSNiNGSARMATURER	1	2	1	0	1	0	0	-1	0	1	0	3	1	1	0	1
BELYSNINGSPRODUKTER	0	1	1	1	1	0	1	0	0	0	0	0	2	1	2	1
KABEL	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
LASTBILSHYTTER	0	0	2	0	0	0	2	1	0	0	0	2	2	0	0	0
Välmepumpar	-2	-3	-1	-1	-1	-1	0	0	0	0	0	2	0	-2	-2	-2
KOMPRIMATORER FÖR AVFALLSHANT	2	2	-1	-1	-2	0	2	2	-1	-1	0	2	2	0	0	-1
Spik	2	2	1	2	2	2	2	2	1	1	1	1	1	1	1	1

PLOG SÅMASKINER SPREDARE	3	3	0	0	0	0	1	1	0	1	1	0	0	0	0	0
Elektronik	1	0	-2	0	2	0	2	3	0	0	1	3	0	0	0	0
Absorbtionskylskåp	0	0	0	1	1	0	2	0	0	0	0	2	-2	0	0	2
KLIMATANLÄGGNING TILL FORDON	0	0	0	0	0	0	1	2	0	1	0	0	0	0	0	0
Trappor	2	0	-1	-2	0	0	1	1	0	0	0	1	0	0	0	-1
INDUSTRIELLA ANSLUTNINGSDON	3	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
LÅSCYLINDRAR	3	0	0	1	0	0	2	1	0	1	0	0	0	0	0	0
Transmissioner och axlar	0	0	0	0	0	0	1	1	0	0	0	0	1	-1	0	0
Stadsbusskarosser	2	0	0	0	0	0	1	1	1	0	0	1	1	0	0	0
PAPPERSMASKINER	2	2	2	2	2	0	0	0	0	0	0	3	0	0	0	0
VENTILER FÖR PROCESSINDUSTRIN	1	1	1	0	0	0	1	0		0	0	2	1	0	0	1
ANALYSINSTRUMENT FÖR MASSAIND.	0	0	-1	0	0	0	2	0	0	0	0	1	1	0	0	0
Hjullastare	0	2	1	0	0	0	1	1	0	0	0	1	2		0	2
KOMPONENTER TILL FORDONSINDUST	2						2									
Bandsågsblad	0	-1	-1	-1	-1	0	0	1	0	0	0	1	1	0	0	0
Försvarsmateriel	1	0	-1	0	0	0	1	-2	0	-1	0	-1	1	0	0	-1

SPECIALFORDON LASTBILAR	-1	-1	3	2	2	0	2	0	0	0	0	1	1	-2	-2	2
INLINEMASKINER	-1	1	-2	-1	-1	0	1		0	1	0	3	1	0	3	3
FORDONSELEKTRONIK	1	1	0	1	1	0	1	0	0	0	0	1	1	0	0	0
Diamantverktyg	3	2	0	-1	-1	0	1	-1	0	0	0	2	0	0	0	0
Elmototer och generatorer	1	1	0	0	0	0	2	1	0	0	0	0	1	0	0	0
ELMOTORER	-1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
Likströmsmotorer	-1	-1	-2	-1	0	0	0	0	0	0	0	-2	1	-2	0	-2
Transmissonsprodukter	0	-1	0	0	-1	3	2	1	2	2	3	0	1	0	-1	0
Växellådor fär lastbilar	1	1	0	0	0	0	1	0	0	1	0	0	0	0	-1	0
FRÄSVERKTYG OCH SVARVVERKTYG	-1	-1	-1	-2	-2	0	0	-1	0	0	0	1	1	0	0	-1
BERGBORRPRODUKTER	3	0	0	-1	-1	0	0	0	0	0	0	0	0	0	0	0
VENTLATIONSPRODUKTER	0	2	1	1	0	0	1	2	0	0	0	0	2	0	0	0
VERKTYG	-3	0	-2	-2	-2	0	0	-2	0	0	0	0	1	0	0	0
INSLIPNING AV OPTIK I GLASÖGON	1	0	-1	0	-1	0	1	1	1	0	0	1	0	0	1	-1
ENERGIKABEL	2	0	1	-2	0	0	0	0	0	0	0	2	0	0	0	0
Automatkoppel till tåq f Persn	1	1	0	2	2	0	1	1	0	0	0	2	0	-1	0	2
HANDVERKTYG	1	-1	-1	2	1	0	0	1	0	0	0	2	1	0	0	0
Låg o mellanspännings ställverk	2	2	0	-2	-2	0	1	-1	0	0	0	1	-1	0	0	1

Bergborrprodukter	0	0	0	0	2	0	-1	0	0	0	0	2	0	0	0	0
Elektriska lindningar	0	1	0	1	1	0	1	-1	0	0	1	2	1	0	0	1
KABEL	1	0	0	-1	2	0	1	1	0	1	0	0	1	0	0	1
VENTILATIONSDETALJER	3	3	0	-1	-1	0	1	1	0	0	0	2	1	0	0	0
ÅPPARATSKÅP	3	0	0	0	0	0	0	0	0	0	0	3	-1	0	0	1
GLASBÄRANDE KONSTRUKTIONER	0	2	-1	-1	0	0	1	1	0	0	0	1	1	0	0	-1
MILITÄRA FORDON	0	-2	-1	-1	-1	0	0	-1	0	0	0	1	0	0	0	0
Laboratorieinstrument																
SKOGSMASKINER	2	2	3	-2	0	2	3	0	0	0	0	0	-1	0	0	0
Band t. skogsmask. o slitstål	0	1	0	1	1	0	2	2	0	0	0	0	3	0	0	0
Skogskranar	2	2	0	2	1	0	0	-1	1	0	0	2	2	-1	-1	2
Kuggstångsdrivna Hissar	2	2	0	2	1	0	0	-1	1	0	0	2	2	-1	-1	2

4. China Outsourcing Effects

	Cost of outsourced component	Control over costs	Quality	Production lead time	Lead time order to delivery	New functionality in the outsourced product	Efficiency in the remaining production	Indirect costs	Time for new product development	Time for industrialisation	Cost for developing new products	Ability to manage volume changes	Capital tied up	Ability to adapt product to customers	After market service	Delivery on time
QDY	2	1	-1	0	-2	0	0	-1	0	0	0	2	1	1	0	-2
SS	3	2	0	0	0	0	1	3	2	0	-1	1	1	1	0	0
MTS	1	2	1	2	0	0	0	2	3	3	3	2	1	2	0	1
Hr	1	1	0	0	1	0	0	0	1	2	1	1	0	1	2	0
Xi	1	2	1	1	0	0	1	1	0	0	1	1	0	1	0	0
HQT	1	1	-1	0	0	1	0	1	1	1	1	1	1	2	0	0
RXJX	1	1	-1	0	0	0	1	1	1	1	2	1	0	1	0	-1
XYDZ	0	1	0	1	1	0	1	0	1	0	1	1	1	0	0	0
YKQ	2	1	1	2	2	1	1	1	1	0	2	1	1	1	1	1
LJ	1	1	1	1	1	0	1	0	1	0	2	1	1	0	0	0
GDDA	1	1	0	1	1	0	1	1	1	0	1	1	1	0	0	0
YU	2	2	1	0	-1	-1	-1	2	1	2	1	2	0	1	0	0
QY	2	2	1	2	0	-1	0	2	1	2	1	1	0	1	1	-1
MUN	2	1	0	2	-1	1	0	1	2	1	1	1	0	1	1	-1
GM	1	2	-1	2	1	0	0	2	1	1	0	1	0	2	1	0
BX	0	3	-1	1	0	1	0	2	1	1	0	0	0	2	2	1
PXNU	1	2	1	2	-2	0	1	1	3	0	1	2	1	2	2	1
WBD	1	2	0	2	-1	0	1	2	2	1	2	1	0	0	0	1
NG	0	3	1	2	0	1	0	2	2	1	1	2	1	0	0	-1
PQL	2	1	0	1	2	-1	0	1	2	1	0	2	1	1	0	-1
FG	1	3	-1	0	2	0	0	1	3	1	2	2	1	1	1	0