Could there be Mutual Learning in the Recycling Industry between a Small Cantonese Company and a Large Swedish Company?
– The case study of Swedish Stena Metal and Cantonese Litian

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Abstract:

Background
The competitive advantage of the recycling industry is becoming more important in this still belittled industry in China, because environmental business had began to be regard and the number of firms in this industry is increasing, and Sweden has advanced concept and longer experience of it.

Purpose
The purpose of this study is to find out the shortage of Value chain activities should be improved of Chinese little recycle companies, through a comparative analysis of value chain activities of a laggard and advanced recycle company.

Theoretical Framework
We have set the steps to identify opportunities for little recycle companies to gain competitive from low cost and add-value. We believe there is primary awareness for little recycle companies to develop based on current condition.

Method
We will use qualitative method in our research

Conclusion
Try to find out the most proper way though the value chain and competitive advantage to develop recycling companies ‘competitiveness. And it also gives some useful suggestions.
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1. Introduction

This section will present a brief of this research and it is about the background and main research questions.

1.1 Background:

In recent years, our world is struggling from the biggest crisis since the Great Depression in 20 century. The Chinese gross domestic product (GDP) growth rate will be slowed from 9.4% in 2008 down to 7.5% in 2009. While 2010, the net exports contribution will be a negative 1% to GDP growth. We found from the latest "China Quarterly Update" of 2008, the World Bank predicted that the financial crisis would continue to expand as well as global economic growth will further slow down drastically to about 1% in 2009. This decline is much higher than 2008, and it would become recovery until 2010.

But in nowadays, there have existed about 10 million dismantling enterprises in the Pearl River Delta and the Changjiang River Delta, thus shaping up the industrial chain of "imports of waste and used products, exports of new products regenerated' into "imports of waste and used products" would be the style which can lead companies skip out of the shadow.

There is a lack of sufficient knowledge to develop the recycling industry. Experts in this industry in China presented that waste and used materials are a kind of "resource misplaced and mixed together" and the increasing "rich ore" across the world that will sooner or later instead of the mineral resources exploited from nature and can be found everywhere. But in China, some people still have their misunderstanding of the development of the recycling industry. Thus sometimes equating the reclaiming and utilization of recycled resources with counterfeiting and pollutions to the environment; still, some people confusingly consider imported waste and used materials as "imported garbage", "losing face" and "a damage to the national image". But in foreign countries, people work in the recycling business are called "engineers creating the future" with respect; but here in China, they are called "Rubbish kings", "Rubbish-collectors", "the gang of beggars", "the rake army" etc. and fall down in their disadvantaged social status. In some places, the "recycle industry" was even called off as the reclaiming of waste and used materials influences the image of a city. All such phenomena are seriously holding back the development of Chinese recycling industry.
There are significant efforts to develop the recycling industry to quickly reduce the pressure of Chinese resource shortage problem. China is a country which comparatively lack of the per capita resources. The per capita occupancy of 45 major resources is much less than the average value in the world (lower than half of average level). With a concept on the future, only 11 out of 45 major mineral resources in China can depend on itself for ensure the supplies, at the meantime these mineral resources such as iron ores and alumina, which are significantly important for the national economic safety, will be short of in a long term development. On the other hand, there are 5 million tons of used steel and iron and over 200,000 tons non-ferrous metal that could be reused in China every year; even those having been recycled and utilized are also treated with simple forms giving priority to the limited recycle of materials, the recycle and utilization rate is comparatively low because of the shortage of resource recycle on a higher level with the content of product reutilization and remanufacture. Overall, to develop the recycling industry would cause great influence that it can both effectively utilize Chinese comparative advantages and increase employment posts, thus to reduce the pressures of unemployment problem.

Litian Recycle Ltd. is a small company located in the Pearl River Delta in south China. It’s owned by one of this study author’s family. In such a small business, how to improve its competitive advantage is an important mission for Litian’s business process since burst of the financial crisis in the end of 2007. Stena Metall AB, on the other hand, is one of the leading recycling companies in Europe. This group has a long history in the recycle business and is a leader when it comes to treatment of different kinds of scrap materials. As the introduction above, even though Litian is doing recycle business in a modern city in China, but Litian’s owners don’t want his posterity to follow these steps to do so, because of that’s still a low social status in their mind. We heard from one of the owner “It’s an industry that can make money but it is not respected by people.” In our opinion, that’s totally a wrong perspective, so try to study more about this industry from bigger and mature firms aim at change or improve the laggard concepts. There is a big difference in attitude between Western countries and China when it comes to scrap business and/or the recycling industry.

1.2 Research Questions:

The purpose of our paper is to study Stena Metal and Litian, and find out the problem of Litian is lagging behind. During this process, Stena Metal and Litian will be compared in some ways. The main research questions of our paper are outlined as follow:
1. What’s the gap between laggard and mature recycling?

2. How Chinese small recycle firms can be different in similar industry to gain competitive advantage?

We will form a theory model following our research area, which will be used to analyze the data and information we collected. The answers for these questions and some further finding will be discussed in the coming parts.
2. Theoretical Framework:

Several code theories will be shown in this section and they will be illustrated in details. They include value-chain activities, competitive advantages by reducing cost or adding value and research and development.

2.1 Analysis steps:

An enterprise can go a long way in search for sustainable competitive advantage with its understanding of firm’s cost structure (John K, 1993). We focus on studying the business and operation process between China and Sweden in the recycle industry. Find out the difference of cost structure between these two organizations to analysis the value chain of Litian, finally figure out the potential management defects.

A value-chain analysis is a strategic analysis to use for a better understanding of the firm’s competitive advantage, to identify where value to customers can be increased or costs reduced, and to better understand the firm’s linkages with suppliers, customers, and other firms in the industry (John K, 1993, P15). We learn from the book *Cost management: A strategic Emphasis (4 Edition)* that we can generally follow the steps to analyze firm’s value chain, and aim to study how to improve competitive advantage from it:

Step 1: Identify the Value-Chain Activities of firms.

Step 2: Develop a competitive advantage by reducing cost or adding value.
   1. Identify competitive advantage (cost leadership and differentiation and focus)
   2. Identify opportunities for added value.
   3. Identify opportunities for reduced cost.

**Step1: Identify the Value-Chain Activities**

*Value* is created by identifying and understanding customer benefits and costs and the combinations of organizational knowledge and learning, together with organizational structures that facilitate response and delivery (Walters and Lancaster, 1999a, 1999b). Valuable is a resource must enable a firm to employ a value-creating strategy, by either outperforming its competitors or reduce its own weaknesses (Barney, 1991, p99; Amit and Shoemaker, 1993, p36).
Value-chain and activities:
Porter (1985) defines “Value” as the “the amount buyer are willing to pay for what a firm provider”, and the value chain was therefore designed to display total value and consisted of the firm’s value and consisted of the firm’s value actives and its margin. Most goods and services are produced through a chain of vertical activities (from upstream to downstream) that add value, it’s considered as value chain.

According to the study of organizations’ value chains, we can tell their operating process apart to analyze or summarize. The determination of which part or parts of the value chain to occupy is a strategic analysis based on the consideration of comparative advantage for the individual firm, that is, where the firm can best provide value to the ultimate consumer at the lowest possible cost. So a study of its value activities can help a firm determine those parts of the value chain for which it is not competitive. Furthermore, an analysis of firms’ value chain helps managers to find out and consider which process or activities should be reduce or outsource and how they can contribute to firms profits and competitiveness.

![Figure 2.1 Michael Porter Value Chain](image)

As the steps of the Value chain show in the table above, we can generally tell its activities apart as two bid aspects, *Primary activities* and *Support activities*.

In the *primary activities*, we can see five generic parts of it involved in competing in any industry. Each one of them is divisible into some totally different activities that depend on the particular industry and strategy:
Inbound Logistics, activities related with receiving, storing, and disseminating inputs to the product, such as material handling, keeping, inventory control, transport scheduling, and return to suppliers.

Operation, activities related with transforming input into the final product form, such as machining, packaging, assembly, printing, testing, facilities maintenance, and equipment operation.

Outbound logistics, activities related with collecting storing, and physically distributing the product to buyers, for example, warehousing for finished goods, material handling, order processing, delivery vehicle operation, and scheduling.

Marketing and Sales, activities associated with providing a means by which buyer can purchase the product and inspire them to purchase it, for example, advertising, promotion, sales force, quoting, channel selection, channel relations, and pricing. In this article, because of the target industry is recycling, and target company seems a particular suppliers of IsteelAsia, so the marketing process might be relatively narrow.

Service, activities associated with providing service to enhance or maintain the value of the product: installation, repair training, parts supply, and product adjustment. From this viewpoint of service, it seems have not much related with traditional recycling, but that's where the interesting place for us to find out.

Within every category of main and support activities there are three types of activities that play a different role in the strategic competitive advantage: Direct, activities directly involved in creating value for the buyer, such as assembling ones, components processing, sales staff use, advertising, product projecting, recruitment, etc. Indirect, activities that make possible direct activities continuously, such as maintaining ones, planning, endowments exploiting, sales staff management, research studies administration, recording suppliers. Quality assuring, it shows activities that assure other activities quality, such as supervision ones, inspecting, testing, revision, checking, adjusting and re-processing. Quality assuring is not synonymous with quality management, because many value activities contribute to quality.
Step 2: Develop a competitive advantage by reducing cost or adding value.

1. Identify competitive advantage (cost leadership and differentiation.)

In John K’s book (1993): Strategic Cost Management: The New Tool for Competitive Advantage. Generally, we aim to achieve low cost relative to competitors from focus on low-cost strategy. Cost advantage could be achieved through these processes as: Economic of scale of production; Experience curve effects; Tight cost control and Cost minimization in specific areas such R&D, service, sales force, or advertising. So in this step, firms figure out the nature and their current or under-account (potential) competitive advantage from the analysis of the value activities, and elements which are causing cost. So the firms have to make strategic positioning to consider their “cost leadership (Edward, 2008, P15)” and “differentiation (Edward, 2008, P16)”. Also, focus is one of generic strategies, and focus strategy has two variants, cost focus and differentiation focus. The cost leadership and differentiation research competitive advantage in a wide range of industry segment, at meantime, focus aims at cost focus and differentiation focus in a narrow segment.

Cost leadership: Cost leadership is a competitive strategy in which a firm succeeds in products or services at the lowest cost in the industry (Edward, 2008). A cost leadership strategy basically indicates that a firm’s theory about how to compete successfully centers on low costs and prices. Offering the same value of a product at a lower price – in other word, better value – tends to attract many more customers. A cost leader often positions its products to target the “average” customers for the mass market with little differentiation. (Mike. W. Peng, 2009) The Cost leaders make sustainable profits at lower price, and they normally have a relatively large market share and tend to avoid niche or segment market by their advantage of price to attract portion of external market. For example, a cost leader can minimize the threat from the five forces. First, it can charge lower price and make better profits compared with high cost rivals. Second, its low-cost advantage is a significant entry barrier. Third, the cost leader typically buys a large volume from suppliers, whose bargaining power is reduced. Fourth, the cost leader would be less negatively affected if strong suppliers increase prices or powerful buyers force prices down. Finally, the cost leader challenges substitutes to not only outcompete the utility of its products. (Mike. W. Peng, 2009). Through a success at price war and cut the profitability of competitors, then firms can achieve the cost leadership. Cost advantage usually caused from productivity in some processes presented in the value chain model (Porter 1980), such as manufacture process,
distribution, or overall administration.

**Differentiation**: Differentiation is a competitive strategy in which a firm succeeds by developing and maintaining a unique value for the product as perceived by consumers. Differentiation strategy is implemented by creating a perception among consumers that the product or service is unique in some important way, usually by being of higher quality, features, or innovation. It allows firms to charge higher price and outperform without cost reduction significantly (Edward, 2008). While cost leaders serve “typical” customers, differentiators target customers in smaller well-defined segment who are willing to pay premium prices. The key is a low-volume high-margin approach. The ability to charge higher prices enables differentiators to outperform competitors unable to do so. To attract customers willing to pay premiums, differentiated products must have some truly (or perceived) unique attributes, such as quality, sophistication, prestige, and luxury.

According to Porter (1980), a business unit can develop its competitive advantage from cost or differentiation or on both. And the low-cost strategy is to achieve low cost relative to competitors. Then, with a strategy of differentiation, differentiating the product of the business unit is by creating something that is perceived by customers as unique. Whether or not a firm can develop and obtain differentiation or cost advantage or differentiation-with-cost advantage depends on how the firm manages its value chain relative to the value chains of its competitors.
Focus: It’s quite different from cost advantage and differentiation because it rests on the choice of narrow competitive scope within an industry as mentioned above. The firms doing focus choose a segment or a group of segment in the industry and adapt its strategies to serve them to the exclusion of others. In this kind of firms, they look for the ways to achieve a competitive advantage in its target segments even though it does not occupy an advantage overall. Thus a focus strategy serves the needs of a particular segment or niche of industry. The segment can be defined by: 1) Geographical market, 2) type of customer, or 3) product line. There is a matter of degree while the wide of focus. Focus firms often offer the needs of a special business area so unique that broad-based does not choose to do it. Actually, a focus firm can be treated as a special firm of cost leader or differentiation, and the special one is more essence differentiated than the large differentiator. It required professional knowledge about a particular area if focus firms want to success in this way.
2. Identify opportunities for added value.
A broad definition of value added is to economically add value to a product by changing its current place, time, and form characteristics to characteristics more preferred in the marketplace. Adding value to products can be accomplished in a number of different ways, but generally falls into one of two main types: innovation or coordination. In general, the problem is to evaluate what, where, how, and who can efficiently perform the marketing functions (Tilley). Innovation focuses on improving existing processes, procedures, products, and services or creating new ones. Often, successful value-added ideas focus on very narrow, highly technical, geographically large markets where competition is sparse. Coordination focuses on arrangements among those that produce and market products. Horizontal coordination involves pooling or consolidation among individuals or companies from the same level of the processing chain. And Vertical integration demands firms to concentrate the different level or steps organizations to coordinate in a same chain. A research of value activities can help senior manager to gain a better knowledge of firms’ competitive advantage and know the activities can add significant value for customer. For example, recycle-processing plant and now generally located near big suppliers and buyers to offer fast and cheap delivery. The value knowledge becomes the means by which the customer considers the value offer (typically made exactly as sorts of product/service attributes) and by which the value chain firm components formulate, evaluate and decide on their value-adding contributions. Non-value added activities are those activities that do not contribute to meeting customer requirements, and could
be eliminated without degrading the product, service, or ongoing stability of the business. How to make product and process become Value-added? That is also a hot spot for firms to be more competitive in the similar industry (Guiqiang W, 2010).

3. Identify opportunities for cut down cost.
An awareness and knowledge of value chain and its activities can help the firms to decide those parts of value chain for which that is not strong and competitive (Edward, 2008). Cost minimization in production must be achieved. Without low cost and efficient producers will be hard to survive and compete in production. Adding value can difficultly take the place of reaching the efficiencies of production attainable through technology and economies of scale. Anyway, Technology in very important in modern industry, not only be used in Product, but also in Process. For example, firms which aim at being cost leader that their research and develop (R&D) program should include a heavy dose of projects designed to lower cost in activities that represent a significant parts of cost, and projects to reduce the cost of product design through value engineering. R&D by the cost advantage holder on product performance must be aimed at maintaining parity with competitors rather than adding costly new features or the goals of R&D will be inconsistent with the firm’s plan (Porter 1985). In such a R&D, firms might figure out the ways to become or maintain their roles of cost advantage owner.

2.2 Research and Development (R&D):
In our study, we will also study the R&D activities of different companies to identify their improving motivation and opportunities for them to improve for gain of competitive advantage. Because after study and compare two laggard and mature recycle companies, we found that there was a big distance exist between them. We found a study of Magnus Lundbäck (2004) presented significant theory and study ways for us.

There many different ways to explain and describe a R&D process. Different companies have their own ways or definitions of R&D, despite of the view taken; the general R&D process is probably one of the most analyzed procedure in companies today, and much research focus on particular aspects of it. For example, the significance of cost effective solutions (Haddad, 1994; Muffatto and Roveda, 2000) also product platforms and benefits of scale in R&D process (Muffatto, 1999; Meyer and Lehnerd, 1997). Furthermore, innovation is essential for the survival of any organizations, and the process through which productions are developed is one of the most significant ways of making the innovation into something commercially useful to the company.
R&D process was described as including all the activities necessary to transform a production concept into a physical product (Wheelwright and Clark, 1992). Several functions are involved in this which can be described in several ways. In order to show the process in the way that is easy to understand, the model developed by Trygg at 1991 will be described below. However, in contrast to what this model shows, the process should be viewed as a parallel process with several functions that take place as parallel processes. The model is, however, useful as an indicator of the different functions involved in the R&D process.

**Research** is generally for the purpose of identifying and developing new element of technology that could be used in the products.

**Concept development** includes concept design, product architecture and platform design.

**Product planning** is the systematic search for as well as analysis and choice of production ideas. It includes aspects such as model building, small-scale testing and financial analysis.

**Engineering design/product engineering** is the iterative process of solving engineering problems, by which the production difference are translated into concrete solutions in the form of drawings and production specifications, such as detail product control.

**Process planning/process engineering, or production planning**, is preparatory work aimed at preparing the production system. It includes the detailed design of tools and equipment, prototypes, and testing of prototype.

R&D could be described to be translation of theory and research into practice and the creative design and development of new production (cf. Smith and Reinertsen, 1988; Clark and Fujimoto, 1991; Gupta et al., 1991). The goal of R&D is to improve products that are in line with the company’s chosen production strategy. The most common use of the term R&D in research refers to the process by which the company’s products are developed. Some researchers go beyond this and try to link research method and development procedures into systematic R&D program (Hood and Hutchins, 1996). Theory and research inform R&D by guiding practices based on prior knowledge. Creative work performed within the systematic R&D process develops both human insight the knowledge acquired by individuals and team. Every R&D process, including the one studied, requires management and coordination of the R&D activities involved.

In this study, R&D will be used to be a compared point between our target companies, furthermore used as combination of value chain activities to
analyze what the laggard one can learn from advanced one. No matter tangible product or intangible service should be treated as production of a good recycle company. Of course, R&D will be utilized as a tool to find out the opportunities for recycle companies to reduce their cost and add value.
3. Methodology

This section will show the way how we collect the information and source and the validity and reliability of the information and source.

3.1 Research problems, method and strategic:

The aim of this paper is to research the problem of these companies, which is business in environmental area, faces with the cost management in financial crisis. In addition, based on the analysis of different companies, we try to find out the proper strategic from the value chain to help them make more profit and enhance their business competitive advantage.

Choice of research method

This research is choosing qualitative research so that it can assess phenomena in a new light. And descriptive is also important that to portray an accurate profile. In order to have a better research, these two methods are of great use to show the aim of paper.

Research strategic

After identifying the research problem or question, the selection of a research method is one of the most important decisions made by the researcher. The research strategy dictates the major direction of the research and it narrows the range of research tactics available to us. In terms of finding the most proper strategic for companies which do the business in environment during the financial crisis, the structure of collecting the data is based on three case studies. Through comparing these three different companies, we suppose to get some useful strategic for these company, especially for the Chinese company.

The first one is a government organization in Sweden and it is a non-profit company which helps citizens to deal with the waste in most environmental way. And they have some recycling center around Sweden and a manufactory in Gävle. They collect organic waste, electronic waste, house waste, wood waste and so on. And they will send them to the recycling manufactory. Moreover, they have their own industry to convert the organic waste to soil.

The second case study is a company with businesses across several European countries. The Stena Metall Group is the Nordic leader in recycling and environmental services. Stena Metall was formed in 1939. With over 60
years of experience, the Group has become an established link in industrial society. The company operates in more than 180 locations in Sweden, Norway, Denmark, Finland, Poland, Italy etc. They recycle ferrous and non-ferrous products, recovered paper, electronic devises and other waste materials. They are not only handling the waste product under commercially viable terms and convert them into new material; they also offer quality assured solutions for a range of industries and sectors of society.

The last one is a Chinese company which collects the waste such as ferrous and non-ferrous metal and sale them to the industry. And it owns a manufactory in Guangzhou which is the main city of Guangdong province. Its main market is local market.

3.4 Data

Collection- Primary and Secondary data

Evidence may be collected from primary or secondary sources. Evidence is collected from a primary source when the researcher goes directly to the originator of the evidence. A secondary source would be information that is already published or available indirectly. This study collects both primary and secondary date so that it can help us to find out the strategic to develop the recycling company, especially for Chinese recycling company.

Firstly, we collect the primary date through interviews with the assistant of manager which named Lena Öman of the case of Gästrike recycling organization in Sweden. We got some useful information about how the company runs and how to save cost.

Secondly, we collect useful information from an interview with Binh Ho Johansson from Stena Metall AB. Binh has the title “Area Manager Asia” for Stena Metal International AB, a sales organization within the Stena Metall group. The main focus for Binh is to understand and analyze the China recycling market. She explained for us about the recycling area from a business point of view and showed us what a Swedish recycling company is doing. She also brings us to visit one of Stena Metall’s recycling yard in Stockholm.

Finally, we had an internet-interview with the Chinese recycling named Litian Recycle Ltd with the owner, Guiqiang Wang. He gave us most of the today’s Chinese recycling situation. And we found some aspects are far from perfect that we can learn from the former two companies.
We collect the secondary data from the internet, books, magazines and journals and so on. And it help us to analysis the three different companies and find out the most proper strategic and management to enhance the company and make profit. And we connect the primary information and secondary information. All of them are the basis of the research.

Data analysis

It is important to evaluate that the researcher should contact an expert to review the latest techniques available for use in the particular research study and compare these to the proposed techniques. We do the data analysis after collecting the primary and secondary data. We compare, select and category the evidence, and then present the useful evidence which are helpful to our aim of research. We analyze the data with the theory and find out the proper strategic and way.

3.6 Validity and Reliability

The primary reason for considering validity and reliability is that they are the most important criteria used to evaluate research and should indicate how well the research will be accepted by a critical audience of peers and assessors or examiners (Dan Remenyi, 1998).

3.6.1 Validity

Validity concerns whether the researcher has gained full access to knowledge and meanings of respondents. Hence the importance of good-quality access to enable such contact to be made within the research site. There is also the need research field notes or interview transcripts back to respondents for verification to ensure that it reflects their understanding phenomenon (Collins and Young, 1998). Access therefore becomes one of the criteria against which the research will be evaluated.

In order to enhance the quality of research, we collected evidence sensitively and effectively. Most of the information came from the reference. And we selected it severely. Meanwhile, most interviewees did not response the questions clearly and directly. So, we prepare the questions carefully and make the question more detail so that to increase the validity. In addition, we collected the evidence and made the interpretation clearly so that ensure the information we collected was accurate. The validity of the research is base on the positive response from the interview and the reference we use. It is critical for us to take it serious.

3.6.2 Reliability

Marshall and Rossman (1995) advocate that, rather than pretend that research
conditions can be replicable, it is much better to accept the particularistic nature of the research and to follow good practice guideline. And it also should keep a log or journal cataloguing research design decisions and justifications.

Most of the resource was come from the interviews, internet, books and journal. And we collect the information sensitive. And we followed the research guideline to design and evaluate our research. Therefore, our research is reliability. However, some information may not be able to reflect the fact because it is impossible to evaluate the truth of massive information of internet
4. Empirical study:

This section will present three different recycling companies which we had made interviews and visited. There is Gästrike Återvinnare, the Stena Metall Group and Litian Recycle. And we will illustrate from value-chain activities, competitive advantage by reducing cost or adding value. We also give a short introduction about today’s situation of recycling company. Furthermore, we will focus on the advantages and disadvantages of them. Besides, all of them are based on the theoretical framework.

Access to the study
About our access to the study, during this research, we had tried to contact different organizations for gaining information. With Ernst's help, we got into contact with Binh from Stena Metall group, and it ended in a very interesting telephone conference. During the telephone conference, we were surprise to learn that Binh can speak Cantonese, which also is our hometown language. This very positive surprise brings us to a personal meeting with Binh and a visit of one of Stena Metall’s scrap yard in Stockholm. During this meeting we discuss and learn more about scrap and recycling business.

4.1 Current situation of recycling company

As the environmental issues are becoming more and more important, many countries government have paid high attention to environment. Meanwhile the amounts of the raw materials are decreasing and the prices of them are increasing. It has a huge prospect for recycling companies to make profit and it is benefit for environment as well. However, last two years financial crisis hit the recycling industry seriously too. Because of the global market turned down, the purchase of recycling materials sharply reduced and the price of it became dramatically low. What’s more, a large amount of recycling companies suffered a severe cash flow problem as banks were reluctant to borrow them the money and were overstocking of products (Montreal Gazette and National Post, 2008). Now, the situation becomes better. Most of the recycling companies seek ways to expand their market, especially the export market. In additional, some of them aims at the one of the biggest recycling market—Chinese market. And it is also critical for Chinese recycling companies to role play as the new market inventors in their own place. (Chenyu & Yejian, 2010).
4.2. Company

In this part, we will illustrate the main information about the examples (Gästrike Återvinnare, Stena Metall Group and Litian Recycle) which we interviewed and we also make a great conclusion about the most important information we collected from several aspects.

4.2.1 The main information about the samples

**Gästrike Återvinnare**
It is a government organization and they offer for 154 000 people service over 5 cities such as Gävle, Hofors, Ockelbo, Sandviken and Älvkarleby. They have two recycling centre in Gävle and Sandviken for citizens driving car to dispose different waste. They collect both family waste and company waste but the price is different which depend on whether the waste is hazardous or not. They have approximately 30 vehicles to transport primarily domestic waste, bulky waste, solid waste, packaging and newspapers and industrial waste. They also provide services for waste treatment and transport. In additional, they have their own industry to transfer organic waste to soil. As they are a government organization, they have overall responsibility for the refuse collection arrangements with the local regulations on waste management and a management plan established, monitored, implemented and reviewed. They deal with some issues from the local regulations on waste management. They commission is to meet satisfaction of the citizens for disposing the waste and protecting the environment.

**Stena Metall Group**
The Group provides total waste management and recycling solutions comprised of customized, innovative products and services. It is the biggest recycling company in Nordic countries and has had over 60 years of experience in recycling and environmental services. The group also includes processing and distribution of steel and aluminium. They have their own research and development depart,ent, finance operations and international trading in oil and metals. Stena Metall run the business in more than 180 locations in 15 countries such as Sweden, Norway, Finland, Denmark, Poland, Italy, Austria etc. The group’s main recycled products are ferrous, non-ferrous, electronic devices, papers, woods and plastics. The slogan and the aim of company is innovative recycling. During the financial crises, the group also suffered great losses, but they manage to recover within 6 months.

**Litian Recycle**
Litian Recycle is a small size company located in the Pearl River Delta of south
part in part of China in Guangdong Province and it's owned by one of this study author's family. It was established in 2005 and it has 18 employees. Four of them are in administration and 14 of them are in factory work. They can recycle 600ton waste per month and its main product is ferrous and non-ferrous. Its market is local market of Guangdong Province and it is one of the suppliers of GISE Steel Mills. Litian is small size; it does not have much capital, facilities and big market. Therefore, it always has a big risk, high competition and it cannot expand its scale easily.
4.2.2 Value chain activities

Figure 4.1 Recycle Firm's Value Chain
First of all, as Gästrike Återvinnare is a government organization, its activities do not have high pressure to add much value, it means it doesn't have to consider what can make it earn as much as possible. At the same time, it does not have many competitors with the local law that other competitors are not easy to enter this market. Lena Öman, one of the employees of Gästrike Återvinnare mentioned “According to value-chain, we want to simplify the process of collecting waste and add more value to activities. Although we do not under a high competition, we also try our best to let our activities become more efficiency so that we can dispose more waste and meet our citizens' requirements.’ She also told us that even Gästrike Återvinnare is a non-profit organization; they still focus on the value-chain because dealing with thousands of tons of waste is not piece of cake. All the processes of collecting the waste are strict to guideline and are not harmful to the environment. Otherwise, citizens will be reluctant to pay the tax of the disposing waste. Lena Öman also showed us the factory how they simplify the process. Different kinds of waste have their own container. The citizens can drive the car to their factory and dispose different waste to the correct containers. Then, she showed us the rubbish-bin which over the city that citizens has separated the waste to different category already and threw waste to the relative rubbish-bin. Therefore, it is easy for them to collect the waste all over the city and they just send the transportations which are big automatic lorry in period time. Under this process, the collecting waste activities have more value because they need less people to separate them apart and reduce cost of course. Even Gästrike Återvinnare is not aiming at making profit; they use value-chain to shorten their process so that they can collect more waste and make it more efficient.

Stena Metall Group, which is the leader of recycling and environment services in the Nordic countries, pays serious attention to value-chain. It is not easy to be the leader within an industry, according to Binh. To be a leader means that you always had to be one step ahead of your competitors when it comes to quality in both products and services. Stena Metall is big and has operations in over 180 locations in 15 different countries, which will give the group competitive edge when it comes to synergies and quantities and the profit is good. When an industry is making good profits, it will attract lots of players that are willing to invest in the same area. So, to fend of competitors, Stena Metall has to invest a lot in machineries and research and development of product and services, and of course to be innovative. Comparing to other countries' recycling company, for instance the USA and Germany, Stena Metall group are still not big size enough when it comes to capital, facilities, and output of products. Therefore, Binh told us, the value-chain analysis for them is quite important to reduce cost, be more efficient and competitive. Because Stena Metall has complicated business activities in more than 180 locations in 15 countries, using the value-chain is important to simplify the business process.
and share information. According to the Michael Porter value chain, the Stena Metall Group’s has a very complicated system of value chain activities, which will make it very difficult to analyze. Binh told us that during financial crisis, they suffered a cash flow and overstock problem and the information sharing between countries and locations are very low and inefficient. Hence, it was the first time in the Stena Metall's group of more than 60 years of history; the group makes a significant loss in the balance sheet. Understanding the importance of value-chain, the group establish a new sales organization, Stena Metal International AB (SMI, which Binh belongs to) to control all the sales activities and to share information in a highly-efficient way and, of course, to also reduce the cost. Binh emphasized that SMI was created to help all business activities within the Stena Metall group to process more efficiently and to connect the sales activity with the different countries and locations.

For the third sample recycling company Litian Recycle is in the most competitive market so that value-chain plays an irreplaceable place, Guiqiang Wang the manager of the Litian Recycle Ltd mentioned. To have a good awareness of the importance of the value-chain in china, which is a developing country and lack of much profession acknowledge, and especially in the small company is not common, manager told us. And he said:" most of Chinese company is focus on experience instead of new knowledge which is very different from western company". “However, as the high speed development of Chinese recycling market, more and more investors as well as foreign investors take part in this area now. So, they start to learn from western company and theory” he stressed. But how what do the Litian Recycle Ltd learn from the value-chain? Guiqiang Wang, the manager was confused and said:" we still are learning on value-chain and hope to seek the perfect to way to enhance our competence. Anyway, we are beginning now and some of the process is modified. We use some auto-machine to separate the waste instead of human. However, some wastes we still need people to deal with that cost lot money and time." He thought that value-chain analysis would be useful for them to improve their product and expand their market.

4.2.3 Competitive advantage

The competitive advantage of Gästrike Återvinnare is a government organization which is different from other recycling company and is hard for other company to enter this market easily. Lena Öman thought this is the biggest advantage of the Gästrike Återvinnare. Meanwhile, they did not satisfy with this competitive advantage, even in a low competitive environment. They still have many plans and measures to reduce cost and add value to the activities which she highlighted. She told us that the most costs of their company are the transportation, administration, treatment, staff, and
information. And we asked “Are there any other external costs?” She answered “The cost of rubbish bins. Because they need to put these kinds of rubbish bins to the whole city which are convenient for citizens to throw the waste. And every year it cost a lot to maintain them.” And then, we asked “Have any other costs you want to mention about?” She said that is the lorry that they use to collect the waste. The lorry is equipped with an auto machine that it does not require people to collect waste from the rubbish bin. It can use it “robber hand “to collect the waste and put it into different parts of the lorry. Therefore, it cost one more technical staff member to accompany with the driver to collect the waste in case of some problem come out and maintain the machine. So, it costs more.” To solve these kinds of problems, she thought they should have strict guideline to control the cost. She said that they would be willing to use a good quality rubbish-bin. Although it may cost lot at first, then it reduces the maintenance fee. She told me that they would have many training program to enhance the technical staff member’s skill so that less problem would be happened on the lorry. She showed us around the collecting waste manufactory which behind her office. She mentioned about that the manufactory is not big enough to deal with the waste now. And the company has select one more place to have a new yard. Without doubles, it cost a lot to build another one. However, she told us that they can deposit more waste well and the citizens are more willing to pay the tax. She thought this is one of a reasonable way to develop the competitive advantages of her company. She also claimed that they have a suitable process to collect waste. For company, it needs to call them first then they will send the lorry to the company to collect the waste. For private citizens, they collect the waste from the rubbish bins all over the city and citizens also can send the waste to their company directly that the waste has been categorized. Finally, they will send the waste to different manufactories which are going to recycle it. In additional, she told us that they have their own recycling factory as well that is different from other collecting waste company. It enjoys high-technology that can convey organic waste to soil. Even though it costs a lot to have such technology but she emphasized that it is worth to have that. It makes them become more competitive that different from others.

For the Stena Metall Group, Binh, told us that the most competitive advantage is that they are the leader of Nordic recycling and environment service. They are the biggest recycling company and they have enough capital to continuously invest in human resources and to improve the equipment and machineries. They group own most of the heavy machines (that cost a fortune to invest in) and they have their own transportations like trucks and trains. They even have their own ships. Because of the large-scale business, they can reduce cost and invest a lot in research and development to improve and find new products. Stena Metall sponsors a professorship position in industrial recycling at Chalmers University of Technology. They also have long-term
cooperation with other universities in Sweden like the University of Linköping. Stena Metall is also member of AGS, a global network for sustainable growth, member of the Business Leader Initiative on Climate Change (BLICC) and supports World Wild Fund for Nature (WWF) in various Baltic Sea projects and their school project Nature watches. Because of this, they can offer many different new products and can keep the cost down. Therefore, not much recycling companies can have better competitive advantage than them. Binh also mentioned that they have many new solutions for better recycling such as waste transport (The Blue Train), Hospital waste (Mediclean), New technology for Freon recycling, Mixed waste (Pyrolysis facility), Unique technology for plastic recycling and Liquid aluminum climate, smart solution etc. All these different projects and products are not easy for other recycling companies to copy and offer. Due to the facts above, it is quite difficult for new players to enter the market and for the competitors; they also have to invest heavily to catch up with Stena Metall.

However, Binh says, compare Stena Metall to other big countries’ recycling companies such as Germany, France, and USA etc, and then Stena Metall is not really big scale enough. When the financial crisis hit the world economy, Stena Metall still face economic problems too. The group suffered a huge damage in 2008/2009 because of the global financial crisis due to overstock of material in their facilities which lead to some cash flow problems. They faced the same problems just like other companies in the world, like cash management problems and the bank’s money lending policies. One of the measures that Stena Metall did to deal with the problem was to create SMI AB, to facilitate the information flow between countries and to make the sales process easier. Furthermore, Stena Metall also has plans to open up and penetrate new market such as China which is and will become one of the biggest recycling markets in the future. With Stena Metall’s long history and experience in the recycling business and the group’s high-technology research and development, the new market entry will be successful.

At last, for the third sample recycling company Litian Recycle is in the most competitive market so that the manager, Guiqiang Wang, thought that they do not have much competitive advantage. As he thought they are only a small scale company they do not have much capital that they can expand their business easily even though they think technology is very important. They told us that there are a lot of the same kinds of company as them. And all their income is not stable that depend on the how many people to sell their ferrous and non-ferrous waste. At the same time the price of the ferrous and the non-ferrous. He mentioned that they are easily to have high risk in business. If there is not much ferrous and non-ferrous sellers or the price of them too low for several months, they would bankrupt. He told us that they do not have much advantages comparing to others recycling company. But he mentioned
that relationship is important in China that they have a good relationship to big buyers and relevant government departments. A large amount of their consumers are depending on the relationship. And they are one of the suppliers of the GISE Steel Mills. To the question how to reduce cost, he insisted that it is critical for them because of the lack of capital. Different people have different duty and they have different machines to reduce manpower. But it far from perfect that he still make great effort to decrease the cost so that they can offer a lowest price product.

However, “the biggest problem to us”, the manager of the Litian Recycle said “We do not have much cash flow that we cannot have much high-technology. It means we cannot offer many different products of recycling comparing to others recycling company.”

4.2.4 Research and Development (R&D)

To Gästrike Återvinnare organization, Lena Öman told us that, they thought R&D is essential in recycling companies. And even though they are a government organization and main duty is collecting waste. She referred to the interest in improving the auto-machine of the lorry and the technology of their owe factory. As facing the high maintain fee of the lorry and taking a much cost in conveying the organic waste to soil, she highlighted the importance of the R&D. They have already to do R&D and try to reduce the maintenance fee. Besides, to their factory, it also takes a long time to wait the organic waste to become soil. She told us they were doing positive R&D in this part.

When it comes to Stena Metall Group, Binh mentioned that the head of technology and environmental science had said that “The Stena Metall Group has long-term owners and a strong drive to develop innovative, sustainable recycling methods. International research on recycling is still limited in scope.” She claimed that even they had made great effort on R&D, but there are still a lot of works to do. Stena Metall strives to be the most innovative company in all the fields that the company is operating within. They have unique competence center which excels in recycling, and where Stena Metal cooperates with institutes of technology and universities in Sweden. Stena Aluminium has their own smelting plant and is in collaboration with other businesses and organizations to develop a safer and more environment friendly way to transport liquid aluminium. The overall goal is to sustainably recover the energy from waste that cannot be recycled. One of the future industries for Stena Metall is extracting raw materials from limited natural resources such as mines, oil wells and forests. According to Binh, all of these R&D projects will work toward sustainable solutions, create value and enhance competitive advantage.
To recycling company Litian Recycle, Guiqiang Wang told us that not only their company, but also many Chinese small recycling companies do not have a R&D. He said that they do not have a strong awareness of this. Most of their attention focused on the profit and expand their factory only. Being lack of invest capital is also a question to them, he mentioned. And then, he said “Even we have enough money to do it, but we cannot find the technicians easily.”
5. Analysis and comparing of finding:

In this section, researchers will analyze the information of empirical study from comparing the mature and laggard companies through following the 2 steps of creating competitive advantage we mentioned in theory.

5.1 Step one: identify Value chain activities of Stena Metall and Litian:

As we mentioned in the theory part, to identify activities can help firms to clearly know where the value exists in them. It's a basic step in our study for identify creating competitive advantage. As the figure we should in empirical study to present the value of recycling business, we can see the supporting activities of a recycling firm comprise HRM, technology development and procurement.

5.1.1 Support activities:

Firstly, we compare the support activities of the yard of the Litian and Stena Metall. Support

| HRM | Transportation Service; Input Standard; Computer & Phone Service; | Procurement | Technology Development | Design of Yard & Internal Convey Plan; Multifunction of Equipment; Sorting Line (Manual or Automated); Standard & Test of Production, etc. | Recycle Firms' Infrastructure | Recruiting & Training; Recruit; Recruit | Recruiting | Recruiting | Collecting of Market Data & Sales Aid | Service Manuals & Procedure | Spare Parts for Maintenance; Relationship. |
We will compare it as this Figure shows us the recycle human resource. In Litian, it hires kinds of people to operate different process in its yard. But it doesn’t ensure whether they really know this business exactly, so the workers are just control the machines in very easy way, except the four employees are doing office job, most of their task is doing physical work. What cause this situation? After we talked to the manager of Litian, we know it is because of the lack of training and study of this industry before the worker entry this company. Social opinion doesn’t support this industry as a popular and high status industry. Even the high education people don’t prefer to learn about recycle, it’s not hard to image how a sparseness of recycle knowledge in the mind of people without much education, to the moment, workers doing recycle in China are such a group of people. On the other hand, when we met the workers in Stena Metall group, they speak fluently English. The workers introduce and explain their tasks to us without communication problems and they know their job and the recycling industry. The operator of the sorting machine did learn engineering in school before they got the job. Furthermore, Stena Metall mostly hires people with high knowledge and skillful expert to work in the yard to check and ensure the quality of their production. In Stena Metal, worker can clearly separate their different own job during the operation, such as truck driver, sale representative manager or other position. But workers will be mix-used in Litian to suit firm’s need, that’s also another element to mess up the process when it’s in peak time. According to this sharp contrast between these two companies, we can easily see the big difference between their human resource levels. How to ensure the employees’ knowledge and quality is the problem should be regard by Litian and the similar firms in China.

Between the two firms, working environment is also a reason to keep employees’ loyalty and working confidence. In Litian, we cannot see any plant in the yard and office, works cook their meals and have in their dorms, and most of the trucks even don’t have air condition, it seriously affect their working emotion and life quality, so it leads the condition of “hard to hire” temporary workers. Furthermore, depending on unskilled temporary labor cannot ensure the efficiency of process. On the other hand Stena Metal aims at create more knowledge based business and it thinks the right competence and opportunities to develop on the job is also a key to employee satisfaction. For achieving employees’ satisfaction and loyalty, Stena Metal invests in clear career paths and offer the employee a number of different and new training programs. It also follows its value – simplicity, reliability and development to ensure all the people they work with can feel they are managing a best way against to the risk and employees can feel secure because of their safe working environment. A steady employee’s structure can lead companies to walk in a high-performance business.

Now we compare the technology development between Litian and Stena.
Figure 5.2 Part of Recycle Firm’s Value Chain

As we showed in the Figure above, both of Litian and Stena Metall had done a good job in the plan of yard, a good plan of yard is critical important to the efficiency of process. In the recycle yard, material flow by a vertical process until it is sorted into different kinds, such as ferrous or non-ferrous. So the different metal and un-sorted waste should be store in different position designed in a technologic way for its different sizes, classification and convenience for convey. “Yard design” and “internal convey” is closely-related. After a design of yard, the most important key for developing process efficiency is the equipment in sorting line. In Stena Metall, we saw a huge machine with 3000 horsepower for sorting task, before using this sorting machine, they convey different size of material by different kind of forklifts. In Litian, they also use forklift to move material, but no matter big or small size, they use only one medium size forklift to do it, it causes many iterative actions for one task, it significant affects the holistic processing pace.

Compared to Stena Metall, because Litian lacks of suitable equipment, material cannot be flowed fast in the yard. Furthermore, in Stena Metall after conveying, metal waste will be sorted automatically into different kinds by the sorting machine, after that, it will be transferred to its own store position. As a whole, it will be sorted into ferrous, non-ferrous and non-value waste. Litian also did the same work to the material, but through different ways. Human power is the main engine in the sorting line, workers use cutter to separate whole waste into pieces and use hand to sort them, at the same time, forklift keep transferring between the sorting place and store position. After comparing the two yard, we are shocked by the output data of them. They sent 200 tons of ferrous scrap in the day when we were visiting Stena Metall’s yard. But in Litian, their output of production is 3000 tons per month included ferrous and non-ferrous. And the size of storing in Litian is about 1/3 as Stena Metall’s. “1/3 scale” VS “huge output distance”, we can easily see the significance of technology affecting process efficiency of recycle.

Moreover, during our empirical study of these organizations, they are also having similar shortage in business in the past year. Because of the financial crisis, material price became floating and decreased a lot. Both of small Litian and big Stena Metall did think it would pass in not a long time, so they keep store and slowed selling. But unexpected situation pushed them into a strait to
lose money. Especially Litian, it had to sell their goods in stock as a half price of the purchasing cost, because they missed the timing to sell it in the beginning of decreasing of raw-material price, and at the meantime firms had to spend money to keep operating such pay for rent, salary, energy and bank interest. If they didn’t sell it, they would be stuck in a hard situation of our cash-flow. Price in metal recycle business operates similarly as stocks trading. Companies should have a system to collect the global or national economic and finance information; this system might include the components which can influence buying or selling activities. It aims at avoid the incorrect decision making in the uncertain market. Procurement is also including many value chain activities in Stena Metall and Litian. After visiting Stena Metall’s scrap yard, we found the difference between them is the input channel, Stena Metall collects metal waste from not only smaller local recycle firm but also individual person. Gästrike Återvinnare also does in this way. But Litian can only collect and buy metal waste from smaller reclaim stations. Stena Metall also offers waste plan and service to the other industry, it makes some of material can be sorted or stored well before it’s sent to Stena Metall. Some of these channels are based on long term relationship or contract. Although Litian’s way doesn’t seem as a multi-channel, but it’s flexible and alterable without long-term contract with its sub-suppliers, finally it had fixed the lost after 2009.
**5.1.2 Primary activities:**

We are going to analyze primary activities of Stena Metall and Litian, and find out the shortage existing in laggard one. Finally, help laggard one to indentify its primary activities in model’s direction. Now we show the figure of general primary activities of recycle firm’s value chain (See Figure below).

![Figure 5.4 Part of Recycle Firm’s Value Chain](image)

In Stena Metall, these five activities had developed well from their long time experience. But in Litian is still having much shortage can be found. From the first step “inbound logistics”, Litian’s yard has trucks to collect material from many sub suppliers from every corner of the city, or suppliers will deliver material to Litian’s yard by themselves if there is a benefit of the dealing price offered by Litian. Also, Litian has professional staff to handle the process such as plan inventory and calculate warehouse, to ensure every kind of material can be clearly stocked in their own position. High pressure compressing machine help Litian to package its scrap into a tetragonal, this can efficiently use the limited space of warehouse and conveniently transport. Every set of material would be weighed up by a electronic platform balance when it was delivering into the yard. Data of each set of material was recorded by hands and paper. In this activities of input and internal logistics, Stena Metall also is doing a good job, furthermore it has its own transport group and train, it can be more conveniently control the plan of its complicated transportation from yard to yard and factory as well.

After the input and internal logistics activities, operation would be the next step of its primary activities, as the process presented in Stena Metal’s 08/09 annual report, we can have a sight of the three most important general steps in recycle yard.

Ya
After the waste metal be sent into the yard, they will be manual sorted, crushed into scrap and automated sorted into different kinds for warehouse. In the step of manual sorting step, Litian uses more worker than Stena Metall to do it, because the labor price is quite cheaper than Swedish, Litian’s manager don’t worry about the high burden of paying salary to workers. But Stena Metall would be willing to use machine and automation in this process. After that, Litian ostensibly save cost but it lose the significance of efficient operation. In the second step of crushing, Litian also depends too much on human productivity to cut the material and workers cooperated in process. Stena Metall has high power crusher which can even cut a car into pieces within few minutes. This high power crusher can also makes the whole operation related closely because it’s directly connect to a auto-sorting center and many transfer-line. This process in Litian can never be so closed because of its half human half machine operation.

After the process is done in the yard, firms have to do outbound logistics, at the meantime marketing and sales should be go with outbound logistics by same paces. In last year the sub-companies were located in many countries and nearly operated their sales independently. Before the crisis, it could fully used their own local advantage to gain more, but this situation was crashed seriously by crisis, individually business model waste many complementary opportunities to coordination of the each sub-companies. Profit margin became narrower and market demands higher flexible sales channel. So Stena Metal establish its international sales company to control the sales task of different location. Higher information sharing and efficient outbound logistics collaboration would be the key to this new sub company’s success. Litian also has two yards located in Guangzhou city, and they were also operated much individually until the crisis time. Now Litian realize they should not waste the chance to work together. They began to share the information of store and sales orders, to help each other increase the turnover rate.
Service, Stena Metal thinks not only the final step after sales but also existing in the beginning of every order. Customers are important elements can cause income, but also can inspire the development of their own skill or technology through finding solution for their customers. This is a part of Stena Metal’s total waste management services. But in Litian, they didn’t identify well in this part of firm, they don’t have system to serve their customer such as quality inspection and waste plan. In this area, Litian obviously should improve their service to complete the primary activities of value chain.

5.2 Step two: Develop a competitive advantage from opportunities of reducing cost and add-value.

According to the Figure (Porter 1985) above show us, we can tell apart the difference between situations of companies. Such as Litian, it’s a little scale recycle company located in south part of China, it just has two yards and 4 trucks to operate daily business. It hires much more people than Stena Metall to work in the yard and didn’t invest much money to improve equipment. Furthermore, Chinese labor cost is much lower than Swedish and Litian doesn’t have any plan to do R&D in these coming one or two year, they recycle metal by a very simple way just sort of collection, sorting, packaging and sale; it has just 2 main buyers and focus their production in ferrous and non-ferrous, but doesn’t do recycle of other materials such as paper, plastic or other
hazardous things. Litian doing recycling as all the others doing but nearly has nothing different to them. They don’t offer any waste solution plan to customer, they just negotiate price of sub suppliers and buy material from them, or collect some business of recycle metal from the facilities which will be remove or building pulling down. So we classify Litian is focuser in its strategy. And after our study and analysis of Litian’s activities, we find that not only it’s a focuser, it’s a cost focuser as well. Because in Litian’s business, it uses the most attractive cost advantage in China, that’s cheap labor. It can save much cost of equipment operation or maintenance, as well as high price of energy. But in our opinions, we think its “low cost operation” surely has badly outcome, we will analysis in the coming part after the analysis Stena Metall’s way to reduce cost or add value.

As the leader of the recycling business in the Nordic area, Stena Metall obviously is very well focused in the recycling business and is leading the development of recycle concept and technology by their advanced business system and R&D. If we just analyze the cost of its recycle metal products, it’s higher than most Chinese companies because of the high price of human resource, material for process, rent of facilities or place of other real properties, also more expensive information spending. So compare to Chinese firm it isn’t doing as a cost leader. It depends on its high quality standard, special service, advanced R&D program and an own entire recycle line to become more competitive. During the interview with Binh and the visit of one of the recycling yard, we understand that Stena Metall had a business system and matching theory system that is different from its own patent and research group. The issue that makes Stena Metall special to their partners and customers is the special individual services and upstream solution plans for buyers and suppliers. With their inimitable products and high-quality services, Stena Metall builds a very special and strong relationship with its partners/customers. One of the examples according to Binh is Stena Aluminium’s advanced technology with its liquid aluminium. Liquid aluminium requires a very high standard technology services to the clients that will result in a tight bonding with its customers. The technique will also help the smelting plant to reduce energy cost for melting the product and also reduced the transporting cost. All these examples again show us the differentiation of Stena Metall’s recycle business.

R&D is a very important part for all kind of companies. Compare with the two companies, of course Stena Metall with the advanced technology had invested much money on R&D and quality of product and services. After Stena Metall’s R&D, production of recycle business had jump out from traditional intangible waste reuse product. But also service and knowledge in the business are playing important roles when it comes to recycling. But anyway, We can see the laggard one had began to learn from others and be aware of the important of advanced business might bring it development and one of this study’s
researcher is member of Litian’s owner family, he had started to learn this industry during his study of Stena Metall and transfer the opinions to Litian’s managers. During this study, Litian knows much more than before about an advanced example. It’s a little step of its concept development of early R&D. and in the past time Litian also did some change as R&D, yard’s redesign for quicker process (process planning) and equipment update(engineering design) from all human worker to processes instead by new forklift as well as inspection of metal standards. Anyway, it’s improving from these little steps of R&D in a relative laggard firm.
6. Conclusion

This section presents an overall illustration about the recycling companies how to enhance their business after analysis and comparing.

Identifying the value-chain activities plays an important part today for the recycling company to develop their business. And competitive advantage is critical as well. The importance of them both has mentioned in the theoretical framework.

Firstly, in order to add more value and increase competitive advantage in recycling market, without doubt, technology and R&D becomes more and more important. The recycling company can reduce cost, have different products and promote productive efficiency though the new technology and R&D. However, it also requires a lot to have it. Small size and minimum size companies can cooperate together to develop new technology and has its own long-term program. But it seems difficult for Chinese recycling companies to have new high technology, as Chinese are lack of this kind of professional knowledge and persons. Not only cooperated with other recycling companies, they also can introduce new partners who are interesting in Chinese market. Meanwhile, Chinese recycling can learn both the new technology and the management. For an assumption, Stena Metall Group may have great interest to expand their market in Chinese market. They have lots of new technology, management and enough capital. And then, Litian Recycle is familiar with the local market. But they are lack of what Stena Metall Group has. To these several reasons, it depends on the local advantage and some existing cooperation. In addition, both of them can achieve more market and target consumers. Besides, the training programs also have a significant role that improves the skills of staff that less problem would happen and enhance the productive efficiency of the machines.

Secondly, distribution channels should not be so simple that is only supplied and distribute from one way of the same product. They should add more distributions that from one simple way to increasing more target customers. Especially for the Chinese recycling companies, they should focus on attracting more suppliers and target customers. Because of the high competitive pressure of Chinese market, the distribution channels should be paid attention seriously.

Thirdly, customer service adds more value to the business that conveys the traditional relationship from only buyer and seller to solid relationship. In recycling industry, having a good relationship with customers is particular important, as most of the income is basis on the amount of the waste from the
customers selling and buying. Recycling companies should be sensitive to the needs of the customers that meet their satisfaction. Therefore, customer service can both improve the relationship and know the demand of customers. Furthermore, they can offer free service to customers that teaching them how to deal with waste that can reduce cost and increase more value. Meanwhile, recycling companies can benefit from it. For example, you can teach your customers how to handle and separate the waste correctly, and then they can sell it to you and get an extra income. And your company and your buyer company can obtain a valuable goods and it is separated as well that can reduce other category fee. It can achieve win-win situation from this backward and forward recycle service.
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Appendix:

In this appendix, we will show some pictures we took during the field work study. They are also the valuable information and memory for writers. And we should thank our supervisor Ernst's suggestion of “learn from reality and communication”.

We did field work in one of Stena Metall’s recycling yard in Huddinge, Stockholm.
This is a big mechanical arm in Stena Metall’s recycling yard. The picture shows when the mechanical arm is moving the material from the ground into the container for transportation.

This is the recycling yard in China; most of the metal material is moved by human.

During this study, we have a deep-felt acknowledge of the gap between Litian and mature recycle companies. We hope that our study can help Chinese recycle firms to realize how great and human-friendly business they are doing now, how it’s important and meaningful to environment future.