The implementation of green logistics in supermarkets in Sweden and China — A case study for ICA MAXI and JIA JIAYUE

MINGFEI GONG & YANJUN KONG

DECEMBER 2013

Bachelor thesis. 15 credits
Bachelor’s Programme in Industrial Management and Logistics
Acknowledgements

Much appreciation to all the people who have given us help and encouragement during the writing of this thesis.

Firstly, we are deeply grateful for the help from our supervisor Rose-Marie Löf and examiner Dr. Zhao, M. They are very patient to provide us so much guidance and help repeatedly on the modification and improvement of our thesis. We could not have finished this thesis without their suggestions and inspiration.

Secondly, we would like to thank many of our friends who have also given us a lot of encouragements and suggestions when we met problems in the process of the thesis project.

Thirdly, we are very grateful to the interviewees of the companies where this thesis project is carried out, the manager Magnus Winges of ICA MAXI in Sweden and the manager Gang Li of JIA JIAYUE in China. They have let us share their information and data with us.

At last, lots of love and thanks to our parents, we cannot work so far without their support and encouragement.
Abstract

Due to the increasing environmental problems in recent years, there are more and more “green” ideas that have been put forward and implemented. Green logistics emerged as a new concept to focus on reducing the pollution of the environment and decreasing the resource consumption which differ from traditional logistics (McKinnon et al., 2012). This thesis aims to identify the demands and challenges of supermarkets to implement green logistics both in China and Sweden, and find out how to improve it through the case study of ICA MAXI and JIAJIAYUE. This study has identified the reasons to cause the differences about the implementation between two countries and found out some approaches to implement green logistics better in China and Sweden respectively. The major method used in this thesis is the qualitative research method by carrying out the interview with the managers in two case companies. The study has found out that both two supermarkets implement green logistics in their daily work, however, the Swedish supermarket does better than the Chinese one in some respects. Finally, the authors propose some suggestions to the two supermarkets for improving the implementation of green logistics.

Key words: Logistics, Green logistics, Green packaging, Green transportation, Green warehousing, China, Sweden, Case study
# Content

1  Introduction ........................................................................................................... 1

1.1  Background ....................................................................................................... 1

1.2  Purpose ............................................................................................................ 1

1.3  Outline of the thesis ....................................................................................... 2

2  Methodology ....................................................................................................... 3

2.1  Choice of two companies .............................................................................. 3

2.2  Choice of comparison ..................................................................................... 4

2.3  Qualitative and quantitative research method ............................................. 4

2.4  Literature review ............................................................................................ 6

2.5  Research design .............................................................................................. 6

2.6  Data collection ................................................................................................ 7

2.7  Reliability and validity .................................................................................. 8

2.8  Methodological limitations .......................................................................... 9

3  Theoretical framework ....................................................................................... 10

3.1  Definition of Logistics .................................................................................. 10

3.2  Green logistics ............................................................................................... 11

  3.2.1  Green packaging .................................................................................... 12

  3.2.2  Green transportation ............................................................................. 13

  3.2.3  Green warehousing ............................................................................... 13

  3.2.4  Reverse logistics ................................................................................... 14

3.3  Green Supply Chain Management ................................................................. 14

3.4  International comparisons of green logistics .............................................. 16

3.5  Demands and Challenging for implementation green logistics .............. 17

  3.5.1  Demands ............................................................................................... 17

  3.5.2  Challenging ........................................................................................... 18

3.6  A summary of the structure of green logistics ........................................... 19

4  Findings .............................................................................................................. 21

4.1  Case A – ICA MAXI in Gävle, Sweden ....................................................... 21

  4.1.1  Packaging for ICAMAXI .................................................................... 21
1 Introduction

This chapter will be divided into the background, the purpose and the structure of this study. In this part, the aims of the list of main purpose and the research questions are to present the significance and the direction of the study.

1.1 Background

Facing the increasingly serious environmental problems in recent years, enterprises also confront many pressures. In the 21st century, people are facing with a lot of environmental problems such as rapid population expansion, seriously environmental pollution, aggravating resource shortage and so on. As a global issue, the worsening of the earth’s environment and the excessive consumption of resources make nations and relevant people put forward various “green” ideas (Henderson, 2010). Of necessity, the concept of green logistics has also been put forward and implemented.

In comparison with traditional logistics, the so-called green logistics refers to the logistics activities which have the goal of reducing the pollution of the environment and decreasing the resource consumption. It has changed the one-way relationship in the general logistics. In the process of green logistics, it must restrain the damage to the environmental as much as possible, and realize the full use of the resources (McKinnon et al., 2012).

Enterprises should not just think about the logistics efficiency, it is also important to cooperate with other stakeholders in the supply chain, and then build a circulatory logistic system with the manufacturers, wholesalers, distributors and retailers. By using the vehicles efficiently, planning distribution center, changing the transports into the green ones and lower the waste emission, the enterprises
can do much to implement the green transportation (Dekker et al., 2012). The other useful strategies are like using biodegradable packaging materials, designing the simple and easy packages; centrally handle the waste and others (Sbihi & Eglese, 2010).

The main reason for doing this study is that green logistic is so potential in the market and the development of the green logistics in China and Sweden is worth studying. Most previous studies on the logistics mostly focus on how to improve the efficiency but now the environmental problems of the logistics are more and more serious. In this study, two supermarkets are the comparison objects, and the conclusion is based on the literature and the analysis of the implementation situation of green logistics in the two big supermarkets. The two target supermarkets are the JIAJIAYUE in Weihai, China and the ICA MAXI in Gävle, Sweden.

1.2 Purpose

This research aims to identify the differences of the implementation of green logistics between the two supermarkets in Sweden and China. The main purpose is to find out how green logistics can be further developed for supermarkets. The purpose of the research could be narrowed down to the following two questions:

- What are the demands and challenges for supermarkets in China and Sweden?
- How is green logistics implemented in supermarkets in China and Sweden respectively?

By comparing the implementation of green logistics in China and Sweden, suggestions are proposed for each supermarket to improve the green logistics implementation.
1.3 Outline of the thesis

This thesis is divided into six chapters. The first part contains the introduction of the background, purpose and the research questions of this thesis. The second part contains the main methods used in this thesis and the whole writing process of the thesis. The third part is the theory that shows the collected information from the literature reviews, the content will be the theoretical basis of the thesis. Chapter four includes all the information collected by the interview from some of the staffs in the two case companies – JIA JIAYUE and ICA MAXI, for example the companies information, and specific implementation situation of green logistics. The following part deals with the analysis of the interview information by combing the contents in chapter three and four. The last chapter, chapter six is the conclusion of the thesis which mainly includes the answers for the two research questions and provides some contributions, further studies and also the limitations in this thesis.
2 Methodology

In order to make the structure of this thesis clearer and easier to understand, the following figure is demonstrated to show the steps for the study of this thesis.

The following figure 1 summarizes the steps for the study process:

- Develop the theme according to the previous learning experience
- Looking for the relevant articles to finish the proposal
- Formulate the purpose and research questions
- Confirm the case research strategy-- case study
- Literature review
- Choose the suitable companies according to the purpose and conduct the interview
- Summarize the information from the interview and make the analysis and
- Draw the conclusion

*Figure 1: Structure of the study*

2.1 Choice of two companies

The choice of two companies has to accord with two requirements:

- Typical geographical character
  
  It is obviously that different countries and continents have different geographical backgrounds, local conditions and culture, so it would be better to choose two companies distinctively differ from each other.

- Same field of business
  
  JIA JIAYUE is a supermarket chain in China that engages in distributing
products for daily use, small household appliances, and fresh food and so on. ICA MAXI is a chain supermarket as well but in Sweden. The two companies follow the general compliance requirements, so JIA JIAYUE and ICA MAXI could be regarded as objects of this study.

2.2 Choice of comparison

According to Walk (1998), there are two possible ways to make the comparison:

- First way is to make the comparison by targeting two cases which are X and Y, draw a conclusion about X after analyzing and discussing X. On the other hand, analyze and discuss Y, get the result about Y.
- The other way is firstly listing all characteristic point about X and Y, then comparing every point of X with every point of Y.

In this thesis, the second way will be chosen on the basis of the above, focusing on two companies and finding out the characteristics that exist in both companies, then comparing the companies.

2.3 Qualitative and quantitative research method

Qualitative research method and quantitative research method are two relative concepts which are used widely in scientific research. A survey study is normally taken in qualitative and quantitative research.

- Qualitative research method
  Qualitative method is a procedure to set a complicated and general idea and is often carried out in a natural environment, for the phenomenon of interest. The purpose of qualitative research used by researchers is to dig out the genuine face, not just the superficial one. By focusing on learning things in
their original environment, the authors try to decode the phenomena defined by people. Follow the way of the qualitative research, professionals can have a full understanding of a social or human issue in different points of views. The major concentrations of qualitative researches are profound exploratory research (Bryman, 1984). The qualitative researches tackle with problems as what is the reason, instead of numerical, statistical and data, it is actually based on the reasons and the methods. In addition, due to this reason, it gives this method more opportunities to manage with human and their behaviors (Erickson, 1985).

- **Quantitative research method**

  To interpret the quantitative model, a quantitative method is used in order to test the previous generalization of a theory's authenticity. It should be noted that it is an artificial determination. Speaking of quantitative research, it has always something to do with numbers and magnitude, and includes the mathematic method to deal with data. It is the rule of quantitative research that is handling with the problems. The foundation of a quantitative method is calculation of numbers. Issues regarding mathematic problems are frequently dealt by this method. It happens to build a quantitative template on the purpose of choosing a third party logistics suppliers. To fulfill the function of this stereotype, by the assistance of a kind of computer application, researchers need to gather data from every supplier and work out the efficiency of them (Bryman, 1984).

In this thesis, qualitative research method is mainly used to find out the conclusions. Qualitative research method is used to help to find out the implementation situation of the green logistics and the demands and challenges for supermarkets to implement the green logistics by the literature review, especially the interview and analysis.
2.4 Literature review

Literature review is a way to realize the ancestors’ achievement and how influence later, it help the authors use a better methodology to research the topics of interest (Ridley, 2010).

In this thesis, the authors will carry out the literature review about the theory of green logistics, why and how green logistic will be implemented in a supply chain in companies and supermarkets.

The literatures used in this thesis include scientific articles, books and journals. The keywords of this thesis are green logistics, sustainable development, Sweden and China. Literatures are mainly found in library and website, such as Google scholar, Science direct and IEEE.

2.5 Research design

For this case, according to Blumberg (2005), six steps are taken in this thesis:

- Building a theoretical framework
- Screening cases, research questionnaire design and data collection.
- Write a report about this case
- Collect and analyze the conclusions of cross-case
- Building a theoretical framework and put the cross-case result in this theoretical framework.
- Summary and report

The six steps outlined in Blumberg’s theory are:

- Step 1: chapter three pays attention to building a comprehensive theoretical framework, which mainly come down to the foundation of green logistics.
Step 2: select two companies, respectively are ICA MAXI and JIA JIAYUE. Searching the information of the two companies, and make same interview about two companies.

Step 3: empirical research, searching the background of two companies, then collecting and organizing data.

Step 4: the discussion part is a preparation of the drawing of cross-case conclusions that compares the two companies with cornerstones from a green logistics perspective and finds out the reason of the differences.

Step 5: this is conclusion part; conclusion stands on the theoretical framework and aims at perfection of the theory based on this thesis.

Step 6: conclusion

2.6 Data collection

In order to know how the two companies implementing green logistics in the supply chain, interview is an efficient tool to adopt. Through going to official website and collecting literature data, the authors have found some useful information, for example some study materials. Therefore the authors decided the way of resourcing and had an interview through e-mail to collect data.

In order to fulfill the requirement of aim, firstly, it is necessary to build a theoretical framework by data collection to find out a reasonable theoretical framework. Secondly, the managers of the case companies are interviewed to get actual information about how ICA MAXI and JIA JIAYUE implement green logistics in supermarket. Finally, the theoretical framework is checked out for consistency.

Figure 2 below is a process about how the data is collected and processed.
The interview question was conducted with the manager through e-mail. For JIA JIA YUE, the authors searched the official website for JIA JIAYUE and ICA MAXI on internet, found the phone number for customer service. Next, the managers and customer service was contacted. The authors have gotten in touch with two mangers at ICAMAXI and JIA JIAYUE. The interviewees are the store managers at the ICA MAXI supermarket in Gävle, Sweden; and the manager Li Gang at the core department of the biggest retail store of the JIA JIAYUE subsidiary supermarkets in Weihai, China.

Because the two companies in Sweden and China use different languages, those interviews are therefore divided into two steps. First, interview questions from ICA MAXI and JIA JIAYUE are collected and gathered. Second, for China part, the research questions are translated into English. The interview questions and the answers are formed in the appendix I in the end of the thesis.

2.7 Reliability and validity

The definition of reliability is the veracity an instrument can measure. What is supposed to measure is called validity (Given, 2008).

When the same research techniques are used repeatedly, reliability can apply to the uniformity of findings (Yin, 2009).
In this thesis, there is some theoretical information from scientific articles and the information of the two supermarkets is from their official websites. In addition, this thesis aims to analyze and compare two supermarkets on how to implement green logistics, so interviewing is an important way to get information in this thesis. In view of JIA JIAYUE which is a supermarket in China, the translation of Chinese to English in the interview questions has to be correct. So, research method has been confirmed effective.

2.8 Methodological limitations

The limitation of this thesis is mainly disported into three aspects. Although some literature reviews have recorded the information about green logistics, most of them actually focused on industrial and other aspects, instead of supermarkets. The authors have to find more information through the interview because of the lack of literature.

The two supermarkets are both large-scale companies in Sweden and China, so there is no direct information from small-scale supermarkets in this thesis. The simple representativeness is the second limitation.

Qualitative method and quantitative method are two research methods mainly used in scientific articles. The authors used qualitative method as the major research method and quantitative method was not used in this thesis. The simple research method is the third limitation.
3 Theoretical framework

3.1 Definition of Logistics

Logistics plays an important role and influences numerous people and enterprises in everyday life. The concept and practice of logistics are continuously developing since it was derived from the Greek adjective “logistikos” which means “skilled in calculating” (Farahani et al., 2009). After 1960s, logistics was introduced into the business field as a term to describe the flows materials during the production process. After 1990s, logistics have been widely focused in industry and academy (Langevin & Riopel, 2005).

Logistics is not only a simple word but also a flexible function that can be changed according to the different environment and demands. The formation of logistics can be summarized into supply, materials management and distribution (Baker, 2006).

There are many definitions of logistics in different articles and handbooks. Examples that valuating the author’s meaning are:

- “Logistics is... the positioning of resource at the right time, in the right place, at the right cost, at the right quality” (Chartered Institute of Logistics and Transport, UK, Riopel et al., 2005).

- “Logistics is...the management of all activities which facilitate movement and the co-ordination of supply and demand in the creation of time and place utility” (Heskett et al., 1973).

According to the definitions, logistic means the whole process from the origin of the material to the sales of the products, and finish the production process by the way of
transport, storage, distribution and implementation at the lowest cost.

3.2 Green logistics

Green logistics is a concept which is defined to reduce the environmental pollution and resource consumption. To compare with traditional logistics, the so-called green logistics refers to the logistics activities that have the goal of reducing the pollution of the environment and the resource consumption. It has changed the one-way relationship in the general logistic activities. In the process of green logistics, it must restrain the damage to the environmental as much as possible, and realize the full use of the resources (Sbihi & Eglese, 2007).

The development of green logistics is still immature in many developing countries, but in the whole world, green logistic has been one of the most important development tendencies that affect all the people. In fact, green logistics represents a variety of activities forms. It contains not only the logistics activities of the enterprises, but also the reaction and control of the society. Therefore, the green logistic has a very close relation with economy, society and environment (Sbihi & Eglese, 2007).

The green logistic is the inevitable result of the sustainable development (Chunguang et al., 2008). The realization of the sustainable development is the goal of implementing green logistics. The strategies that are helpful to implement green logistics can be chosen like using green transport strategy; advocating green packaging and carrying out the green machining. By using the vehicles efficiently, designing the distribution center, changing the transports into the green ones and lower the waste emission, the enterprises can do a lot to implement the green transportation (Markley & Davis, 2007). Enterprises should not just think about the logistics efficiency of their own, and must cooperate with other stakeholders in the supply chain, then build a circulatory logistic system with the manufacturers, wholesaleres, distributors and retailers (Byrne & Deeb, 1993).
3.2.1 Green packaging

Green package means that the materials of package must have a “friendly relationship” with environment. First, the packaging should be manufactured without coal and other fossil raw materials. According to its characteristic, the green package is also called “ecological package” or “environmental friendly package”. This kind of package could be reused and recycled in biosphere, and it is easy to be degraded thus promoting sustainable development. It will not cause any bad influences on human health and environment during its whole lifecycle. In a word, green packaging required to use the packing material which can be recycled, reused, and cannot bring trouble to environment (Guirong & Zongjian, 2012).

Green packaging design is normally made in order to achieve the aspects like reduce, reuse, reclaim, recycle and degradable (Wang & Yang, 2008).

- Reduce, that means refuse over-packaging. The premise of packaging is to protect the products, make the goods integral during the logistics and marketing. It tries to use minimum material to finish. Some developed countries have developed packaging reduction as the preferred measures of packaging (Rokka & Uusitalo, 2008).
- Reuse, it means to put the packages back to use for multiple times. Through simple technology dispose, the packages can be used again. Reclaim means that put the unrecoverable packages into other ways like energy production, it can availabley avoid the secondary pollution (Ahmed & Varshney, 2011).
- Recycle, it means to use the materials which have the characteristics such as zero power, zero cost, and zero pollution. Especially, recycle materials need to have multiple choices, which can reduce the pollution (Villanueva et al., 2005).
- Degradable material is the ultimate packaging waste that cannot be reused, when it comes back to the biosphere, it cannot bring bad influence to
environment (Guirong & Zongjian, 2012).

3.2.2 Green transportation

Generally, transportation in logistics is the delivery process between the participants of logistics activities. Green transportation is also called the sustainable transportation, it refers to all kinds of transportation from the suppliers to the purchasers with lowest impacts on the environment and society. Green transportation can also be summarized as the low pollution transportation systems which are built to save maintenance cost, and protect the environment (Schulte, 1999).

- “The most important part in the green distribution is the transportation. Green transportation also called sustainable transportation. It refers to a traffic concept which using the transport suitable for urban environment, and complete the social economic activities with lowest pollution.” (Litman & Burwell, 2006)

3.2.3 Green warehousing

Green warehousing is the warehousing idea which has implemented “green” concept into the warehouses and the distribution centers. It is a relatively new approach in green logistics. The so-called green warehousing means that the characteristic of the warehousing process is a sense of environmental awareness. It also means that the bad effect on the environment nearby the warehouse should be reduced. It should be low energy cost, minimum material usage, and least waste producing. The design for a green warehouse can be both for the warehouse itself and the elements inside. To implement the green warehousing, some critical points should be considered. The evaluation for the possible environmental impact on the local environment should be conducted before the construction of the warehouse is designed. The special products
should be stored away from the living quarter. The warehouse should be designed based on environmental technology. For example roofs with solar panels, doors with sensor which can automatically close, building materials with better insulating and many other sides. In the warehouses, the equipment should be chosen with less energy consumption and less pollution. Meanwhile, the reasonable space layout is also an important issue in green warehousing implementation (Đukić et al., 2010).

3.2.4 Reverse logistics

There is a concept called “reverse logistics” that is one logistics type reverses to the traditional supply chain. It is divided into the following parts: recycling the old products; transporting the old products; checking the old products; repairing the recycle products and selling the recycle products. The aim of using the reverse logistics is to properly handle the products or recover some value of the products (Byrne & Deeb, 1993; Rodrigue et al., 2001).

3.3 Green Supply Chain Management

Green supply chain required to combine environmental criteria and organizational purchasing decision, and at the same time establish a good and long-term relationship with suppliers (Gilbert, 2001). Actually, there are three elements which may influence green supply chain: environment, strategies and logistics. Moreover, green productivity needs to build a triple focus system which includes environment, quality and profitability in order to implement sustainability strategy (Hwa, 2001; Nunesetal, 2004).

Srivastava (2007) defined that the green supply chain management is integrating the strategies of environment protecting in supply chain. It includes the designing of products, the material purchasing and selection, the process of production and
manufacturing, the delivery of the products and manager of product waste (Srivastava, 2007).

Figure 3 shows the four steps to achieve green supply chain management, offered by the America environmental protection agency.

![Figure 3: Green supply chain management: A state of the art literature review, Srivastava, (2007).](image)

- First step is identifying costs. The companies need to know how much they will spend on the whole process. Some environmentally friendly equipment or something that can decrease the environmental pollution may cost extra money. The companies need to estimate the cost first.

- Second step is determining opportunities. The enterprises need to choose a good opportunity to implement green logistics. When people realize that environment is facing a big problem, the supermarket can catch this opportunity.

- Third step is calculating benefits. The supermarket needs to calculate how much they will use to implement green logistics, and how much profits they will get. Sometimes implementing green logistics will cost more money.

- The forth step is divided into deciding, implementing, and monitoring. It means that supermarket should make a correct decision first, and then
implement green logistics and monitor people to ensure it will be under control.

3.4 International comparisons of green logistics

Liu (2009) finds that implementing green logistics can help companies continuously improving and getting benefits for a long time.

Although China has implemented green logistics since recent years, it is still lack of experiences and technologies for supermarkets and companies. Some international technology and system has not been applied widely in supermarkets and companies (Li, 2008).

Green logistics which practices in German-owned supermarkets and logistics companies in China has prominent organization characteristic. The German-owned companies keep implementing green logistics in every process to guarantee green logistics continuity and effectiveness. The employees in the German-owned supermarkets are required to be trained, and understand the importance of green logistics (Zhu & Sarkis, 2010).

Grit and Thomas mentioned that a Germany green logistics delegation led by Dennis in 2000 stimulated Chinese to learn scientific ways to implement green logistics and green supply chain. Furthermore, it is utmost necessary for most of Chinese companies to implement green logistics in commercial activity. It could help companies gain advantage in international competition in the future (Grit & Thomas, 2005).
3.5 Demands and Challenging for implementation green logistics

3.5.1 Demands

With the development of the modern logistics, some environmental problems start to appear during the development such as lack of resources, environmental pollution because of over-use energy. Under the pressure of the environment problems, people must make a change to the situation. The governments have to make a control and therefore a lot of legislations were enacted and required enterprises and persons to make a deep consideration about environmental protection (Kushwaha, 2010). On the other hand, because of the broadcast about environmental protection through public advocacy, education and other ways, the environmental awareness of customers are improved. People will prefer to cooperate with the enterprises which produce environmentally friendly products or do better to protect the environment during the business activities (Heiskanen, 2005).

In order to control and supervise the enterprises and persons’ behavior to protect the environment, the countries and organizations enact a lot laws and regulations. The European Union introduced an ordinance about low-carbon logistics regulations in 2009. The regulations set up new standards for the carbon dioxide emission performance for some new passenger cars, and start to take some actions to punish the automobile manufacturers who did not meet the requirements (Zhong et. al., 2012). All the automobile manufacturers in member states of the European Union are required to demonstrate that all the new vehicles’ selling, registry or servicing must have been EC type-approved. In addition, the manufacturers should take measures to guarantee that the tailpipe emission comply with the relevant standards (EC 2009/595). In China, the displacement of the vehicles follows the weight classification system. The standards are classified into 16 weight classes, from the vehicles which weighing less than 750 kilograms (approximately 1,500 lbs) to the vehicles weighing more than 2,500 kilograms (approximately 5,500 lbs). The vehicles
just follow the weight classification system from the moment they are produced (An & Sauer, 2004).

For the biocidal product that used for appropriate using while stocking and transporting, the European Union stipulates that the member states can only authorize the biocidal products which follow the requirements. The biocidal product needs to be sufficiently effective. It also requires that there cannot be any unacceptable impacts on the target organisms, human health, both surface water and groundwater and also environment. The biocidal product which was classified as toxic and carcinogenic cannot be authorized for selling to the public (EC 2009/107).

The European Union has also enacted statutes about the packaging and packaging waste. The measures in the statute described that the member states should take actions to develop the packaging reuse systems and prevent the formation from packaging wastes in order to reduce the environmental pollution. The packaging materials should be reduced the components of hazardous substances. The states are encouraged to design recoverable reusable packaging materials (EC 2009/292).

In Sweden, all the metal cans and plastics bottles which containing beer, cola, soda and other similar beverages are required to be included in an approved recycling system before entering the Sweden market. If the products are not included in the approved recycling system, the manufacturers will be charged a fee up to 50000 SEK (SFS 2005/220).

3.5.2 Challenging

According to Sbihi and Eglese (2007), some underdeveloped countries do not pay attention to implement green logistics and the managers in factories or companies in underdeveloped countries do not have high environmental awareness. Factories or
companies keep pursuing short-term value, that means managers only want to get profit in short period and ignore negative influence in long-term.

Sheu et al. (2005) put forward that implement green logistics may cost extra money. For example, in order to choose shortest route, the managers will equip GPS on every truck in developed countries. GPS is an expensive machine and will be a big expending.

Using synthetic biodegradable materials to package will cost more money. In the markets, disposable packaging material is cheaper than biodegradable materials (Prendergast & Pitt, 1996). Although customers pay attention on green logistics, limitation exists. Customers care more about the food packaging but not for environmental aspects (Rokka & Uusitalo, 2008).

3.6 A summary of the structure of green logistics

Figure 4 is the summary of the green logistics parts theoretically. The research questions and interview questions are both put forward according to this figure.

![Figure 4: Structure of the green logistics in theory](image-url)
According to theory part, green logistics is mainly divided into four element sections: green transportation, green packaging, green warehousing and reverse logistics. Green transportation means choosing right trucks and shortest routes to transport products to the supermarkets. During this process, the supermarkets try to reduce cost and flue gas emission to the air. Green packaging means that natural and degradable materials are required to be used on packages to protect the environment. Green warehousing means a warehouse of a supermarket has to have a clean environment and suitable temperature, and avoid shaving damp and radiation. Reverse logistics in supermarket means that the supermarkets recycle cans and bottles and the expired products are reutilized. According to this information, interview questions are based on the four sections.
4 Findings

The finding part shows the results of the interview for the two case companies: ICA MAXI and JIAJIAYUE. The information is both collected by the interviews through e-mail. The interviewees are the manager Magnus Winges at ICA MAXI, Gävle and the manager LI Gang in JIA JIAYUE, China.

4.1 Case A – ICA MAXI in Gävle, Sweden

- Company Profile for ICA

ICA is one of the biggest supermarkets in Northern Europe, also the biggest supermarket in Sweden. ICA was remerged as a new brand in 1998, the main businesses in ICA are product retail, bank and real estate. Product retail of ICA focuses on food processing and sales of daily necessities and foods. Now, ICA has 2400 stores and more than 21000 employees all over the world. The vision in ICA is “we make every day a little easier”. The mission of ICA is to focus on the selling of food and meals and become the leading retailer in the world. The core idea of ICA is to capitalize on the best of being both big and small by combining entrepreneurship with economies of scale (ICA’s office page, 2013).

4.1.1 Packaging for ICAMAXI

ICA implements green packaging in all processes. About the products from suppliers to supermarkets, managers require that the paper boxes and wood plates should be the first choice to package products. If some special products need plastic covers, managers will choose degradable materials. In supermarkets, the bags which packaging cooked food have to use from safe material. However, ICA cannot decide the packaging of the products which are not produced by ICA, but the supermarkets
are willing to choose green packaging products. For example, ICA stocks chips for suppliers, and the packaging of chips has two types which are plastic bags and fiber containers. ICA is willing to stock potato chips which use fiber container packaging. The drinks at ICA are usually packaged by cans, paper boxes or glass bottles, because cans, papers and glasses have high recovery value. ICA also offers biodegradable plastic bags to customers when customers settle accounts. However, the plastic bags are not free in order to discourage customers from taking shopping bags with them. The selling plastic bag is 1kr each and paper bag is 2kr each.

4.1.2 Transportation for ICAMAXI

About the delivery for food and daily necessities from suppliers to supermarket, the managers choose the shortest routes and the suppliers use GPS systems to plan the shortest routes between suppliers and supermarket in order to save transportation costs. According to ISO14001, when implementing green logistics, it helps companies to reduce cost, save energy and materials and improve the corporate image of the company. ICA chooses the transport truck carefully. The emission standard of trucks has to conform to the requirements from local environmental protection agency. Trucks use gasoline or biodiesel in order to reduce exhaust emission.

4.1.3 Warehousing for ICAMAXI

The choice of ICA warehouses has three requires: enough storage space; moderate temperature and far away from radiation. About inventory, ICA has a professional term to manage inventory. The workers clean the inventory every day and the cold storage branch has temperature control systems to guarantee the products stocking in a good storage environment. For normal temperature area, if some products need spray chemical preservatives, ICA chooses non-toxic preservatives as far as possible. If some chemical preservatives corrosively, ICA will avoid the chemical preservative
touch with floor or external environment. If the chemical preservatives carelessly touch the floor or external environment, the manager will deal with it immediately in order to make it environmental friendly.

4.1.4 Reverse logistics for ICAMAXI

ICA establishes equipment in front of the gate, and this equipment could recover second-hand bottles and cans. To recover the used bottles, people can get 2kr for each big plastic bottle, 1kr for each small plastic bottle and beverage can. Finally, the customers will get a ticket with the return money from the equipment and be available to buy things with this ticket in the supermarket. People can also choose to donate the money to charity if they want. About expired products, Sweden knows well the technologies for rubbish recycling. By separating the waste, some available products will be sent to power station to generate electricity to achieve reutilization, some of those will be sent to process and become fuel, some products will be sent to heating field to supply heating and some others will become chemical fertilizer.

The manager said that all the logistics activities of ICA MAXI followed the legislations and requirements of the European Union or Sweden.

4.2 Case B – JIA JIAYUE in Weihai, China

- Company Profile for JIA JIAYUE

JIA JIAYUE Group Corporation Ltd is a large chain enterprise group with its main business in supermarket chain, logistics distribution, food processing and agricultural products wholesale in a body. It put into operation of supermarkets since 1995 and now it is the largest supermarket chain enterprise in Shan Dong Province, and now has more than 20,000 staff and more than 500 chain stores cover the 34 cities and
counties in Shan Dong Province. JIA JIAYUE has a long-term cooperation with more than 6000 well-known suppliers and producers. It successfully opened the sales market in Jiao Dong for the more than 400 enterprises and realized the win-win for industry and commerce. In recent years, the company has built 4 modern logistics centers and 5 logistics centers for the fresh food according to the strategy “develop the logistics before developing the chain”. The company develops the efficient and quick supply chain system by docking with the manufacturers’ logistics, minimizing costs and forms a distinctive feature of logistics chain management pattern. It also plays a good demonstration role in the industry. (JIA JIAYUE’s office page, 2013)

4.2.1 Packaging for JIA JIAYUE

According to the interview answers from the manager Li in JIA JIAYUE, the packaging for JIA JIAYUE can be divided into two parts: The first one is the packaging to protect the goods during the delivery and the other is the material for packaging the products in the supermarkets. When the trucks are delivering the products to the supermarket, the scattered products are usually put into the big boxes and trays in order to make the transportation easier. The material used to package different kinds of products must be different according to different characteristics and situations. Some of the materials are used from the unrecyclable plastic and paper. About the packaging in the supermarket, the packaging bags or plastic bags used for the fresh and the ready-made food both meet the country’s national safety standards. The manager emphasized that these are the most basic precondition. The plastic bags used for carrying the goods are made from recyclable materials and can be degraded too. The plastic shopping bags used to be free but in recent years they are required to be paid for by the customers.
4.2.2 Transportation for JIA JIAYUE

For the transportation, the transport machines and the transportation modes are the most important things. According to Li, when suppliers transport the goods to the chain stores of the supermarket, there are five standards that the transport department should follow. First, the transport routes are always straight as far as possible. Second, with the increasing of the chain stores, the distribution routes are formed into four basic directions (east, south, west and north). Hence, the delivery and reach time can be relatively fixed. Third, the vehicles are required to be full-load in order to save the cost. Forth, all the delivery vehicles are installed with a GPS (Global Position System) to monitor the route situation to avoid getting lost. Last, the good route planning, cost control and vehicle scheduling need the auxiliary tool- TMS (Transport Monitor System). About the emission of the delivery vehicles, there is no special emission standard to control. All the emission follows its own emission standards when the vehicles sell from the factories. The situation is that all the vehicles are using diesel oil as fuel, so the exhaust emission is relatively serious. In other hand, the vehicles for internal transportation are most given priority to move with manual. Mechanical equipment covers a big area, so they are not suitable for internal use. In addition, a small amount of machineries and equipment are electric and environmental, and fuel equipment is only for outdoor use.

4.2.3 Warehousing for JIA JIAYUE

About the selection of the warehouse location for JIA JIAYUE, the site selection criteria requires that the inventories should have the moderate temperature and air circulation. Some special products need special protection like preservatives. If the supermarket does not take any measures, it will contaminate the environment. On this point, the manager Li said that in order to avoid the contamination, the inventories have the special zones to keep the goods which need antiseptic treatment. However,
the damages for the wall or floor which are caused by preservatives are not taken into account.

4.2.4 Reverse logistics in JIA JIAYUE

Li expressed that reverse logistic are still not widely implemented in his working place. The supermarkets are not responsible to recover the used plastic bottles or cans, also the batteries, and the supermarkets do not provide the recover equipment. All these beverage bottles and other used materials must be handled by the customers themselves. About the expired products and broken products in the supermarkets, there is no secondary use of technology to deal with them yet and all of these products are handled as garbage disposal. By the way, even the supermarkets take charge to recycle the bottles and cans, the price of the bottles and cans cannot have a standard pricing procedure, so the response of the customers cannot be estimated.

At last, the manager Li said that the supermarket has its logistics team to deal with the logistics objects, but the team is not professional for the logistics. The manager also expressed that most green logistics are implemented in industry areas but not much in retail business like supermarkets in China.

4.3 Summary of the interviews

According to the information from the interview, the core concepts are integrated into the following figure 5. It contains the main actions that the two case companies actually did correspond to the four aspects in green logistics.
### Table 1: Green Logistics Practices

<table>
<thead>
<tr>
<th>Category</th>
<th>ICA</th>
<th>JIAJIAYUE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Green packaging</strong></td>
<td>All packaging materials are environmental-friendly</td>
<td>Most packaging materials are environmental-friendly but some of them are unrecyclable</td>
</tr>
<tr>
<td></td>
<td>Always require customers to pay for plastic shopping bag</td>
<td>Supermarket have Started to require customers to pay for plastic shopping bag just for few years</td>
</tr>
<tr>
<td><strong>Green transportation</strong></td>
<td>Suitable route planning</td>
<td>Suitable route planning</td>
</tr>
<tr>
<td></td>
<td>Vehicles use gasoline or biodiesel</td>
<td>Vehicles mostly use diesel oil</td>
</tr>
<tr>
<td><strong>Green warehousing</strong></td>
<td>Suitable temperature and location</td>
<td>Suitable temperature and location</td>
</tr>
<tr>
<td></td>
<td>Protecting reagents are mostly non-toxic</td>
<td>Preservation spray may cause corrosion damage for wall or floor</td>
</tr>
<tr>
<td><strong>Reverse logistics</strong></td>
<td>Recycle equipment of bottles from customer</td>
<td>No recycle equipment</td>
</tr>
<tr>
<td></td>
<td>Properly recycle expired product</td>
<td>Expired products are mostly handled as garbage</td>
</tr>
</tbody>
</table>

*Figure 5: Information summaries for the interview*
5 Analysis

According to the information from the finding part, the demand and challenge for two supermarkets to implement green logistics can be compared in following aspects in figure 6 below.

![Comparing of demand and challenges in implementing green logistics for two supermarkets](image)

### 5.1 Demands

Combine the theory and finding, it is obvious to notice that the pollution and lack of resources, government requirements and legislations for environmental protection make the companies pay more attention to green activities like green logistics (Kushwaha, 2010). According to the whole environment of Sweden and China, the environmental pollution in China is more serious, so JIA JIAYUE has more pressure from the environment than ICA MAXI. Both supermarkets have awareness to implement green logistics and protect the environment. However, according to the finding part, Swedish people pay more attention to environmental protection than Chinese. As the result in figure 6, ICA MAXI does greater than JIA JIAYUE on
environmental awareness. European Union has very strict standard in carbon dioxide emission performance. Hence, the vehicles of ICA MAXI often use gasoline or biodiesel in order to reduce emission and achieve the standard. On the contrary, there is no specific standard for vehicle emission in China. It means that there is no demand to control the emission very carefully. As a result, the vehicles of JIAJIAYUE always use diesel oil as fuel because of the low cost. In Sweden, there is a requirement from government expressed that the plastic bottles and cans have to be marked as recoverable ones (SFS 2005/220). So, most large supermarkets in Sweden have the recover equipment like ICA MAXI does. In addition, the cost of beverages and canned products includes a little part of fee for bottles and cans. Customers will be more willing to get back those fees. There are also some specific requirements for packaging materials in Sweden (EC 2009/292). Therefore, ICA MAXI is greater than JIA JIAYUE on government’s requirements and laws in figure 6. ICA MAXI also uses green packaging in whole process and requires suppliers to provide products with green packaging as well.

5.2 Challenges

According to the investigation, ICA MAXI actually did well in implementing green logistics, so the biggest challenge for ICA MAXI is how to do better in the future. Different from Sweden, the environmental protection awareness of Chinese is not so strong (Sbihi & Eglese, 2007). Implementing green logistics is not very popular in China yet. There is a lack of good model or approach as guideline to implement it especially in supermarket. One of the challenges for JIA JIAYUE is to improve the environmental awareness. For most of the companies, the cost should be considered at first before doing any activities. If the initial activity cannot bring benefit or it even increase the cost, company would not implement it (Giunipero et al., 2012). For instance, using gasoline or biodiesel instead of fuel will increase transportation cost for JIAJIAYUE. Based on the results from the interview, JIAJIAYUE does not have
the equipment to recover the used plastic bottles, cans and batteries. On one hand, this kind of equipment is very rare in China, the company has to introduce it from foreign countries or develop it by itself. This kind of equipment leads to a high level of technology or investment. On the other hand, the value of these bottles and cans is very low in China because of the value of product itself is relatively low. As the figure 6, the other challenge for JIA JIAYUE is the technology and cost.

5.3 Packaging for ICAMAXI and JIAJIAYUE

Green packaging means that the packing materials needs a “friendly relationship” with the environment, avoid using chemical material, like coal chemical, and encourage the use of material that can be recycled, for example the paper box (Guirong & Zongjian, 2012). Green packaging tries to realize the goal of reducing, reusing, reclaiming, recycling and being degradable. The packaging materials need to have the characteristics like recyclable and degradable, the used packaging could be recovered and used again (Guirong & Zongjian, 2012).

ICA uses recyclable material during transportation and sales. In transportation, the managers choose paper or wood to transport products. In supermarket, the manager also chooses some products with green packaging.

The packaging for JIAJIAYUE can also be divided into two parts: one is the packaging for the delivery and another is the packaging in supermarket. In The delivery part, the manager often uses cheap packaging material that cannot be recycled and the packaging material will pollute the environment when it was disputed in natural environment. In supermarket, cooked food use specific packaging. But supermarket does not consider the packaging of food that whether it uses recyclable material or not. The packaging of food is disposable, it will become rubbish after using once.
Compared with JIAJIAYUE, ICA uses recyclable material in transportation part and in supermarket. JIAJIAYUE only pays attention to cooked food packaging, but for other products, JIAJIAYUE does not pay attention to green packaging.

5.4 Transportation for ICA MAXI and JIAJIAYUE

Green transportation is also called sustainable transportation. It means during transportation, humans use the minimum energy and cost to transport product to destination, also produce minimum pollution to environment (Litman& Burwell, 2006).

At ICA, suppliers transport products to supermarkets by using GPS system controlling the rote plan, GPS system will help drivers to choose the shortest route plan, avoid wrong way or detour. Suppliers choose specific trucks to deliver the products and the trucks’ emission of exhausted gas has to be accord with local emission standard. Trucks use biodiesel or gasoline.

For JIAJIAYUE, there are five standards that the transport department should follow. The transport routes are always kept straight as far as possible. Second, with the increasing of the number of chain stores, the distribution routes are formed into four basic directions (east, south, west and north). Hence, the delivery and reach time can be relatively fixed. Third, the vehicles are required to be full-loaded in order to save the cost. Forth, all the delivery vehicles are installed with the GPS to monitor the route situation to avoid the wrong way. Last, the good route planning, cost control and vehicle schedule need the auxiliary tool- TMS. The lack is that the trucks do not have an emission standard.

ICA and JIAJIAYUE both have a good route planning, ICA and JIAJIAYUE use new technology to avoid wrong way. But JIAJIAYUE does not have standard for truck,
truck can produce exhausted gas to air randomly.

5.5 Warehousing for ICAMAXI and JIAJIAYUE

Green warehousing is a new approach in green logistics, green warehousing includes warehousing process and environmental awareness. Green warehousing needs to have a good storage condition for products, such as a room with suitable temperature, and clean environment. For environmental awareness, the warehousing needs to be far away from polluted areas and inventory activities do not produce pollution into environment (Đukić et al., 2010).

ICA’s managers have a high requirement for warehousing. Enough space to stock products is the most basic requirement. The workers clean the warehouses every day to ensure a clean environment and keep the inventory within a suitable temperature. ICA chooses non-toxic preservatives in inventory. If some corrosive spray touches the floor or spread to the environment, ICA will take measures to deal with the emergency.

For JIAJIAYUE, site selection criteria required that the warehouses location should avoid damp and hot, while with the moderate temperature and air circulation. Spray insect-resist agents do not consider whether it pollutes the environment or not.

According to the information, ICA seems to pay more attention to environmental protection. In comparison JIAJIAYUE is paying more attention to products than the environment.

5.6 Reverse logistics for ICAMAXI and JIAJIAYUE

Reverse logistics is a new logistics type reverse to the traditional supply chain. It can
be divided into six parts which are recycling the old products, transporting the old products, checking the old products, repairing the recycle products and selling the recycle products (Byrne and Deeb, 1993; Rodrigue et al., 2001).

ICA has implemented reverse logistics into two ways: ICA sets some machines to recycle the used bottles and cans in front of the gates, customers can sell those bottles and get money, or they can use it in the supermarket or donate it. The expired products and broken products will be sent to power stations and heat-supplying factories, and then power stations and heat-supplying factories will use the expired products and broken products to reproduce energy to serve people.

JIAJIAYUE does not have a mature system in reverse logistics. There is no machine to recycle bottles and cans. Customers usually throw the bottles and cans by themselves. The expired products and broken product will be landfill immediately.

ICA has a wholesome reverse logistics system to avoid produce waste and transform waste as much as possible. JIAJIAYUE does not realize the system to change rubbish into energy.

About the packaging, ICA roughly performs better than JIA JIAYUE in two points. The first is the packaging materials used by JIA JIAYUE are not all made from environmentally friendly materials but ICA did it better. The second is that the plastic shopping bags are not required paying in JIA JIAYUE few years ago until it has been improved dramatically in recent years. About transportation, ICA does better than JIA JIAYUE for the fuel for the vehicles and emission control. In addition to this, both two supermarkets do well in vehicles control and cost saving. About warehousing, both of them do well in location chosen, warehouse control and warehouse layout. ICA does better in special situation handling than JIA JIAYUE and JIA JIAYUE need to pay more attention to the warehouse damaged by the special protecting agents. About reverse logistics, ICA performs well in this aspect. Because JIA JIAYUE is still
very immature in this aspect, the recycle equipment is not popularized. Customers cannot find a place to recycle the used bottles in JIA JIAYUE. At last, JIA JIYUE does not have a professional team in logistics management but ICA has.
6 Conclusion

According to the purpose mentioned above, there are two main research questions in this thesis:

- What are the demands and challenges for supermarkets in China and Sweden?
- How is green logistics implemented in supermarkets in China and Sweden respectively?

By comparing the implementation of green logistics in China and Sweden, there are some suggestions for each supermarket to improve the green logistics implementation.

Because of the problems with the pollution of the environment and the lack of resources, people start to pay more attention to the environmental protection. Governments in many countries have pushed out a lot of requirements and legislations to require and control the activities of the business. These can be viewed as the demands of implementing green logistics in Sweden and China. About the challenges, lack of technology and equipment, lack of the laws and the political and economic environment are the most serious problems for Chinese companies and government. For Sweden, current situation of the implementation is quite good but how to make the further development should be considered.

For the second question, according to the theory, the four important parts in the logistic activities are the packaging, transportation, warehousing and reverse logistics. In ICA, for packaging, all the packaging materials during delivery process and inside the supermarkets are environmental-friendly materials, such as paper box and wood plates. The supermarkets require the customers to pay for the plastic shopping bags. For transportation, ICA chooses the shortest route to save transportation cost.
The delivery trucks are mostly using gasoline or biodiesel to reduce exhaust emission. For warehousing, ICA has a professional team to manage. The warehouses are required to have enough space, suitable temperature and suitable location. The protecting reagents are mostly non-toxic and the managers will handle sudden accidents if the chemical reagents touch the warehouses or external environment. For reverse logistics, each retailer store has the equipment to recycle used bottles and return the money to the customers. The expired products will be handled properly.

In JIA JIAYUE, for packaging, in delivery process, most of the materials are environmentally friendly but some of the packaging materials may be the unrecyclable plastic boxes and paper boxes. Inside the supermarkets the packaging materials are both in compliance with the safety standards. The shopping bags are payable now but free before. For transportation, the route planning meets the minimum distance, and the vehicle schedule is controlled. The emissions of the outside delivery vehicles do not have a standard, the fuel for the vehicles are mostly the diesel oil. Internal mechanical equipment is most environmental-friendly. For warehousing, the location, temperature and other external parts of JIA JIAYUE both conform to the requirements of environmental protection. However it is insufficient that spraying to lead corrosion damage for the wall or floor is not taken into account. For the reverse logistic part, JIA JIAYUE does not have enough mature implementation yet. There is no recycle equipment in the supermarkets and the expired products are mostly handled as garbage disposal.

According to the finding and analysis parts, both ICA and JIA JIAYUE have performed green logistics in their logistics activities.

Comparing with the operation of green logistics in two supermarkets, ICA does better in some parts. It is expected that green logistics will help companies to reduce waste in producing activity and protect environment. Not only in Sweden and China but also in other developed countries and developing countries. The current situation of green
logistics and green supply chain implementation in Chinese supermarkets and companies still remains unclear. Because of less research study experience in green logistics aspect, it is hard to get enough information about green logistics to support the implementation of green logistics. So many Chinese companies should experience many tribulations to implement green logistics. By analyzing the performing of green logistics in two supermarkets, there are some suggestions that the authors will give to JIA JIAYUE. About the packaging, JIA JIAYUE needs to have higher standards to regulate the packaging materials to make them more environmental friendly. The supermarket must keep charging for the shopping bags to control the plastic pollution. For transportation, JIA JIAYUE needs to have a more careful standard to control the emission of the vehicles. For warehousing, the authors suggest the JIA JIAYUE pay more attention to the treatment for the chemical protect agents. At last, JIA JIAYUE can learn from ICA, trying to equip a recycle machinery to recycle the used bottles.

6.1 Limitation

The authors only choose one supermarket in each country, so that the coverage is not wide enough. The other limitation is that both supermarkets are large-scale industries, it results to that the representativeness of the companies in this research is not very strong. The JIA JIAYUE is a quite big group and has a lot of retailer stores in many areas. Due to the different economic conditions it is quite different in different areas in China, the different supermarkets may have different situation in management or other aspects. The authors just chose one of the JIA JIAYUE supermarkets in Weihai so the result is more or less one-sided.

6.2 Further study

The authors found that there is no comprehensive set of enforcement rules to evaluate
how the supermarkets performed in green logistics, so during the further study, it is meaningful to find a systematic standard to evaluate the performances. Furthermore, this thesis just focused on the green logistics and green logistic is just a part of green supply chain, so it is considerable to do a study for green supply chain if possible in the further study.
References


http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32009L0107:EN:NOT


Hawthorne, R. W, (1975). On Applications of Interpretive Structural Modeling to


SFS 2005:220 Ordinances on deposit-and –return system for plastic bottle and metal cans.


Appendix

Interview questions for ICA MAXI and JIA JIAYUE

For JIAJIAYUE

1) Ask: Is there a digital system applied to control the stocking in the super market?
Answer: Yes, there is a DRP system to control products enter, sell and automatic replenishment. According to the average of daily sells automatic replenishment.

2) Ask: When the suppliers transport the goods to the chain stores of the super market, how to design the route in order to find the best routes to save transportation cost? (contact detail to suppliers ?)
Answer:
• The transport routes are always kept straight as far as possible.
• With the increase of the chain stores, the distribution routes are formed into four basic directions (east, south, west and north). Hence, the delivery and reach time can be relatively fixed.
• The vehicles are required to be full-load in order to save the cost. Forth, all the delivery vehicles are installed with the GPS to monitoring the route situation to avoid the wrong way.
• The good route planning, cost control and vehicle scheduling need the auxiliary tool- TMS.

3) Ask: Is the amount of emission of the delivery vehicles in accordance with relevant standards? Do you use the clean energy as the fuel of the vehicles?
Answer: The emission of the delivery vehicles does not have relevant standards. Vehicles use diesel oil, tail gas emission to air seriousness.

4) Ask: The application of the preservatives for some special products will result in negative influence over the environments, are there any effective measures against
that? Yes or no, please explain
Answer: Supermarket set a special area to store products which need spray preservatives. Avoid preservative touch with other products. Supermarket does not consider the problem that preservative will corrosion floor and wall. If some products actually need quarantine, supermarket will choose plastic bags.

5) Ask: About the selection of the warehouse location, how do you choose the right place as the address of the warehouse?
Answer: The standards of selection of the warehouse have to avoid damp and scorching heat. And Guarantee warehouse have a suit temperature and fresh air.

6) Ask: Are the packing bags or plastic bags used for the ready-made food in the supermarket causing health issues?
Answer: It is respectful; the packing bags have conformed national food safety standards.

7）Ask: Are the plastic bags used for carrying the goods recyclable?
Answer: Yes, supermarket use polyethylene plastic bags, it could degrade.

8）Ask: Are the supermarkets recovered the used plastic bottles or cans?
Answer: Supermarket is not responsible for recovered bottles and cans. Customers dispose bottles and cans by themselves.

9）Ask: How to dispose the expired products and broken products in supermarket? Or recycle?
Answer: For expired and broken products, there is no technology to reutilization the expired and broken products.

10）Ask: Are the vehicles for internal transportation purpose manual or automated, when they are automated, do they use electricity or gasoline?
Answer: Inside of supermarket, internal transportation purpose manual.

11) Ask: Is there a reasonable structure for the arrangement of the goods in different sections? For example fresh vegetables sector is separated from the hygienic sector.
Answer: Of course, supermarket has fruit area, vegetable area food area and so on.

12) Ask: Is there a professional team to ensure the logistics? When yes, explain it.
Answer: Yes, supermarket has a logistics team but not professional.

13) Ask: How to package scattered products when transport the products?
Answer: Small size products are usually put in box. Most of material cannot recycle.

For ICA MAX
1) Ask: Is there a digital system applied to control the stock in the super market?
Answer: Yes, supermarket has numerical control system. This system could control retail purchases and shipment.

2) Ask: When the suppliers transport the goods to the chain stores of the super market, how to design the route in order to find the best routes to save transportation cost? (contact detail to suppliers ?)
Answer: Install GPS system in every truck avoid wrong rote.

3) Ask: Is the amount of emission of the delivery vehicles in accordance with relevant standards? Do you use the clean energy as the fuel of the vehicles?
Answer: Yes, vehicles use gasoline that not produces much tail gas. Local environmental protection administration has a standard control emission to air.
4) Ask: The application of the preservatives for some special products will result in negative influence over the environments, are there any effective measures against that? Yes or no, please explain
Answer: Yes, supermarket uses non-poisonous preservative that cannot harm human healthy. If some preservatives corrosion environment, supermarket will deal with it. The warehouse keeps a clean environment every day.

5) Ask: About the selection of the warehouse location, how do you choose the right place as the address of the warehouse?
Answer: The warehouse has suit temperature, avoid pollution and radiation.

6) Ask: Are the packing bags or plastic bags used for the ready-made food in the supermarket causing health issues?
Answer: Yes, it is has to be healthy.

7) Ask: Are the plastic bags used for carrying the goods recyclable?
Answer: Yes.

8) Ask: Are the supermarkets recovered the used plastic bottles or cans?
Answer: Yes, there are two recovered machine in front of the gate. The two machines could recover bottles and cans. If customers want, customers could donate the money.

9) Ask: How to dispose the expired products and broken products in supermarket? Or recycle?
Answer: Yes, Sweden has the technology that uses rubbish to create power. Some rubbish will send to relevant departments to use again.

10) Ask: Are the vehicles for internal transportation purpose manual or automated, when they are automated, do they use electricity or gasoline?
Answer: some are manual some are automated. Automated used electricity.
11）Ask: Is there a reasonable structure for the arrangement of the goods in different sections? For example fresh vegetables sector is separated from the hygienic sector. Answer: Yes

12）Ask: Is there a professional team to ensure the logistics? When yes, explain it. Answer: Yes. Logistics term will have meeting the made plan and strategy sometimes.