



GREEN SUPPLY CHAINS: EFFORTS AND POTENTIAL  
APPLICATIONS FOR THE TURKISH MARKET

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## **ABSTRACT**

### **GREEN SUPPLY CHAINS: EFFORTS AND POTENTIAL APPLICATIONS FOR THE TURKISH MARKET**

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This study aims to explore the suitability and significance of waste management as the starting step of having green supply chains in general and then extend to answer the following research question: Which sector would be the most visible one if “being green” was implemented, when aiming to get the attention of other sectors and the consumers at the same time? The importance of the mentioned “getting attention” lies beneath the importance of consciousness while talking about green issues. Answering this question requires to understand the current situation in the Turkish market in the first place and then to extend this understanding to better evaluate the potential of waste management to help companies and consumers gain consciousness at the same time. Based on the literature and personal experiences, electrical and electronic equipment (EEE) were decided to be selected as the sector. The focus group method was selected to collect the opinion of managers from the EEE sector in Izmir. Focus group study was implemented in two sessions. Results showed that the waste management implementation could provide a good starting point in terms of having green supply chains, and the EEE sector could serve the

purpose of attracting attention of other sectors and consumers as this sector's products determines the electricity usage of buildings with their electricity efficiency.

Keywords: Green supply chains, environmental issues, EEE sector, focus groups, waste management, reverse logistics

## ÖZET

### YEŞİL TEDARİK ZİNCİRLERİ: TÜRKİYE PAZARI İÇİN POTANSİYEL UYGULAMALAR VE ÇABALAR

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Bu çalışmanın amacı, atık yönetiminin, tedarik zincirlerinin çevreci hale getirilmesi (yeşil tedarik zincirleri) için ilk adım olmak için uygunluğunu ve önemini araştırmaktır. Bunu yaparken de bir yandan şu araştırma sorusuna cevap aramaktır: Çevrecilik öncelikle hangi sektör tarafından benimsenirse hem son tüketicilerin hem de diğer sektörlerin dikkati bu yöne çekilebilir? Burada bahsi geçen dikkat çekmenin önemi, çevrecilik konusundaki bilincin önemiyle vurgulanmaktadır. Bu sorunun cevaplanması, öncelikle Türk pazarının mevcut durumunun anlaşılmasını ve daha sonra da bu anlayışın atık yönetiminin firmaları ve tüketicileri bilinçlendirmesi yolundaki potansiyelinin değerlendirilmesini gerektirmektedir. Literatüre ve kişisel tecrübelerine göre, elektrikli ve elektronik cihazlar, sektör olarak seçilmiştir. Bu sektörde faaliyet gösteren İzmirli üretici firmalarının tepe yöneticilerinden fikir almak amacıyla odak grup çalışması metodu benimsenmiştir. Odak grup çalışması, iki grup şeklinde gerçekleştirilmiştir. Araştırma sonucunda, atık yönetiminin yeşil

tedarik zincirleri yaratılması için uygun bir başlangıç noktası olduđu ve elektrikli ve elektronik cihazlar sektörünün de bu amaç için uygunluđu ortaya çıkmıştır.

Anahtar Kelimeler: Yeşil tedarik zincirleri, çevre sorunları, elektrikli ve elektronik cihazlar sektörü, odak gruplar, atık yönetimi, ters lojistik

## To My Parents

I am thankful for my parents who have always been there for me when I needed guidance and who have always supported me with compassion. They have always stood by me when I was making choices in life and always shown great faith in me in whatever I pursued. I am thankful for their unconditional and endless love.



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# CHAPTER I

## INTRODUCTION

The emphasis on environmental issues is gaining importance in time, mainly because of the global warming, and humans' continuous harm to the environment. Today, with the signs of global warming starting to affect everyday life, individuals at first, and thus companies are starting to try and do their part in helping to save the environment. Depending on whether it is an individual or a company, we are talking about, the incentives and triggers that lead entities to differentiate themselves. Although individuals may be motivated by emotional incentives, and motivated to start helping to slow down the global warming, companies need more complex and more based-on interest motivations; such as economic advantages, prestige, brand image, or complying with laws and regulations (e.g. Walker et al., 2008; Ferguson and Toktay, 2006; Hervani and Helms, 2005; Sarkis, 2003; Carter, 2000; Bansal and Roth, 2000; Beamon, 1999; Sharma and Vredenburg, 1998; Walton et al., 1998).

When we compare individuals' and companies' efforts in overcoming their negative effects on the environment, we can easily say that as companies do the most damage, both qualitatively and quantitatively, their efforts matter the most. In this context, I believe it is us, academicians' responsibility to make related research and point out these motivational points for the companies. In order for the companies to get in action, first, the awareness must be created about the issue. After this, the company needs to learn how they can ameliorate their processes in order to decrease their

negative effect on the environment. Even if the company is aware that it is harming the environment and that it should in fact do something about this, if they don't know the means by which they can achieve this goal, they cannot act.

That's why the starting point of a thorough research about environmental studies, should be creating awareness, detecting motivational elements, and suggesting some methods by which companies may be subjected to these motivational points.

In Turkey, the situation is not any different than the other regions/countries in the world, and the government has decided that setting some rules and regulations and applying some sanctions for the companies who do not comply with these rules and regulations, will help motivate companies to participate in environmental initiatives and make their processes more environmentally-friendly. The Ministry of Environment of Turkey is on the verge of imposing some waste management rules and regulations on the companies, which will enforce them to be more careful about their operations' environmentally-friendliness in all terms. As supply chains are extending through nations, it is more important now than ever to be in accordance with certain rules and regulations for all parties in order to guarantee compatibility of commonly used materials and processes.

Government regulation is an important element in leading companies to start adopting proenvironmental behavior as has been suggested in many studies (e.g. Kahhat et al., 2008; Zhu and Sarkis, 2006; Burnley, 2001; Hall, 2001; Boyle, 2000; Beamon, 1999; Walton et al., 1998). On the other hand, there also exist some studies that suggest financial incentives are playing the biggest role in company decisions and attitudes (e.g. Zhu and Sarkis, 2006; Ferguson and Toktay, 2006; Sarkis, 2003;

Sharma and Vredenburg, 1998), in which they seem to come to the same conclusion: consumers are the “most powerful actors in the supply chain” (H’Mida, 2009).

Some broader-minded companies are able to foresee these rules and regulations and have already started to look for ways by which they may be part of the leading companies in the sector, in terms of being environmentally friendly and/or being experts on environmentally friendly business processes, which also includes being a 3PL company that provides its customers with services such as; waste management, reverse logistics, environmentally friendly manufacturing consultation, etc.

In this study, I would like to take the opportunity and be a member of the leading team of researchers, and make a contribution by researching best practices, examining the rules and regulations that will be set by the Turkish Ministry of Environment, and be able to answer these questions:

- Why put the emphasis on waste management first?
- What points will the companies need to be careful about after these rules and regulations take effect?
- What is being done in Europe? Asia? The USA?
- What would be the ideal case for Turkey?
- What are the attempts in the Turkish market? Are they relevant / effective?
- What is the role of waste management in supply chain process of Turkish companies?

While trying to answer these questions, I believe it will be my utmost important duty to try and point out what Turkey is missing by not managing (business) processes in an environmentally-friendly manner. I will also try to stress on the fact that if Turkey

is trying to comply with the rules of the EU- whether Turkey will enter the EU or not, complying with these rules will be good for Turkey, no matter what- sooner or later, Turkey will have to learn how to manage its business processes in an environmentally friendly manner, and I will try to prove that waste management is a good start point.

In the literature review that was conducted during this study, it is possible to say that the waste management literature can be broken down into categories by countries and by sectors. If Turkey will adopt waste management policies, countries category will be important, in order to have a general knowledge about what is going on in the world. But in my opinion, the sector category is a little more important, as it will enable me to put forth which sectors Turkey absolutely must implement waste management in, which sectors will most benefit from managing waste, and which sectors will make the biggest difference when waste is managed in an environmentally friendly manner.

### **1.1 Aim of the Study**

“Being environmentally friendly” has gained more importance than before because of the amplified effects of global warming. When this is the case, being “green” has started matter more in the eyes of the consumers, at least the environmentally conscious consumers for the time being. Since the global warming is continuing at an increasing speed, this situation will not be any different in the future if not increase. Thus, companies should be focusing on changing their business processes and their business ideologies to fit the idea of being green.

In order to have truly environmentally friendly businesses, their supply chains must also be environmentally friendly with all aspects (Vachon and Klassen, 2006;

Kampstra et al., 2006; Sheu et al., 2005; Walton et al., 1998; Wu and Dunn, 1994). In order to reach such a situation where the whole supply chain is run environmentally friendly, there must be a starting point. And when think about the stages a supply chain has to go through in order to become environmentally friendly, it is possible to say that understanding the “waste” concept first of all, because understanding the “waste” concept allows companies to eliminate processes that do not create any value, as well as try to cut down material waste and so on. Therefore, starting to implement an appropriate waste management in the supply chain could prove to be a good start.

According to the “Waste Management Action Plan (2008-2012)”, waste management has started to be taken into serious consideration, as an initiative to support Turkey’s adaptation to EU regulations period (Waste Management Action Plan (2008-2012), 2008). This action plan gives the signals that in the coming several years, there will be regulations about waste management and companies will have to adapt themselves to these regulations.

The aim of this study is to identify sectors that will be most beneficial for Turkey, if waste management was started to be implemented, in order to get the attention of other sectors and consumers. Getting attention is important because regulations set certain boundaries around companies’ activities, but these regulations can force companies to behave accordingly only to the extent to which the regulations enforce them to. So, in order to motivate companies to truly want to adapt the green thinking concept into their management philosophies, a driver that is stronger than legislation is necessary, which happens to be economic motivations (Zhu and Sarkis, 2006; Ferguson and Toktay, 2006; Sarkis, 2003; Sharma and Vredenburg, 1998). Only



then, companies may start seeing “being green” as a means of competing in the sector and start being green because they have to be green in order to survive in the market.

As for the consumers, it is a must that companies make their efforts visible to the eyes of their consumers, because no matter how environmentally friendly they may be conducting their business, if the results cannot be seen by the consumers, they will not even realize whether the company is “green” or not. Therefore, a means to make companies’ (and their supply chains’) efforts visible will also be mentioned in this study.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.1 Green Supply Chains**

When talking about green initiatives, one must not think on a company basis, but on a supply chain basis. This necessity is sourced from the fact that the competition is going on between supply chains and not companies any more (Christopher, 1997). In order to retain and increase supply chains' competitiveness, the initiatives, be it green thinking or lean, must be adopted by the whole supply chain and coordinated by the focal company (Vachon and Klassen, 2006; Kampstra et al., 2006; Sheu et al., 2005; Walton et al., 1998; Wu and Dunn, 1994). The level of integration determines the environmental performance as; greater supply chain integration leading to better environmental performance (Vachon and Klassen, 2006).

Being green, thus affects environmentally conscious consumers' view of the company (H'Mida, 2009; Maineri et al., 1997), which becomes an advantage for the companies and in turn, their supply chains. Environmentally conscious consumers are able to prefer green companies, increasing the company's (and its supply chain's) competitiveness and economic performance (Kumar and Malegeant, 2006; Rao and Holt, 2005). Thus, in order for the green supply chain to be meaningful and be profitable, the efforts must easily be recognized by the consumers, and stakeholders, in order to be rewarded for these efforts. This point draws the attention to this critical point: no matter how perfectly green processes are run inside of the supply chain, in

order to gain and raise awareness, a visual tool may be necessary, as D'Souza suggests: eco-labels (2004, 2000). Ecolabels are aimed to tell how environmentally friendly a product is to a potential customer, at the point of sale, enabling customers to evaluate products according to environmental friendliness in a way which does not require high knowledge about environmental regulations.

Having a green supply chain depends on minimizing (or eliminating if possible) the negative effect that the supply chain has on the environment. This requires using environmentally friendly materials as well as leaving as small amount as possible to dispose of, so waste in the supply chain must be managed in order to make most use of these wasted materials. Only the part that surely cannot be made any use of must be disposed. This logic is in parallel of closed loop supply chain concept. Because in closed loop supply chains, the aim is to return the used products back into the production process, creating a loop with the materials at hand, minimizing natural resource usage, which will in turn reduce the impact on the environment, making the supply chain also green.

## **2.2 Closed Loop Supply Chains and Reverse Logistics**

Wells and Seitz (2005) define closed loop supply chains as: “In general terms, closed loops consist of two supply chains: a forward and a reverse chain whereby a recovered product re-enters the traditional forward chain” while Defee et al. (2009) support this idea by using the definition “the need to integrate both strategic and operational decisions across the forward and reverse supply chains that a company operates”. As it can be understood from this definition, the closed loop supply chain aims to put the supply chain in a recirculation mood, allowing waste minimization.

When the subject is the environment and environmentally friendly implementations for businesses, “closed loop supply chain” is the targeted formation, as it serves the aim of helping save the environment by minimizing the waste generated. By which, it is possible to say, if closed loop supply chain is the target, reverse logistics, a means of green supply chain management, is the tool to reach that target, because in order to minimize waste, a reverse flow must be introduced into the supply chain and it should be managed, in order to make most use of the materials/products returned by repairing and reusing, refurbishing, remanufacturing, cannibalization, or recycling (Kumar and Malegeant, 2006).

Because of this relationship, closed loop supply chains and reverse logistics literature has been examined together in this study.

In the closed loop supply chains literature, it is possible to see that there is a common point where many authors agree upon that in order to achieve having a closed loop supply chain, a company in the chain must undertake the leadership (Defee et al., 2009; Clendenin, 1997) and coordinate the supply chain (Kampstra et al., 2006; Sheu et al., 2005).

Closed-loop supply chains add complexity to the existing supply chain as it usually requires investment and the newly added functions of the supply chain are full of uncertainties (Kocabasoglu et al., 2007), which always makes things more difficult. At this point, Kumar and Malegeant (2006) suggest that cooperating with eco-friendly third party companies help increase the supply chain’s integration level and its green consciousness while the supply chain learns from this third part companies’

past experiences on the subject, which is a very important element (Zhu et al., 2008a; Krumwiede and Sheu, 2002).

Integrating forward flow and reverse flow in the supply chain, is a complex process, since it requires the reengineering of the flows that are managed in the supply chain, as reverse flows differ from forward flows in terms of increased uncertainty, pricing, and collection (as opposed to distribution) (Pokharel and Mutha, 2009; Clendenin, 1997).

Reverse logistics have been examined in three major groups in the literature as: reversed materials (Xu et al., 2007; Richey et al., 2004; Guide and van Wassenhove, 2001; Guide et al., 2000), reversed materials collection (Karakayali et al., 2007; Mollenkopf et al., 2007; Morana and Seuring, 2007), and reverse flow processes (Neto et al., 2008; Fleischmann, 2001; Realff et al. 2000; Hess and Meyhew, 1997; Van der Laan et al., 1996).

Fleischmann (2001) has defined five types of reverse flows as: end of use returns, commercial returns, warranty returns, production scrap, and by-products. These reverse flow types are laid out in order to understand what kinds of flows must be expected to be managed by companies that are willing to transform their supply chains into closed loop supply chains.

Reversed materials are important as what is reversed in the supply chain (the potential waste) determines how harmful the wasted part will be to the environment. It has been accepted by the European Union that no matter how much waste is tried to be reduced by repairing and reusing, refurbishing, remanufacturing, cannibalization, or recycling (Kumar and Malegeant, 2006), still there is a wasted

part and thus have formed some regulations to reduce wasted materials amount and the harmfulness of these wasted parts, such as WEEE<sup>1</sup>, REACH<sup>2</sup> and RoHS<sup>3</sup>; which are the regulations about the waste of electrical and electronic equipment, safe use of chemicals, and the restriction of the use of certain hazardous substances in electrical and electronic equipment, respectively. The process which contains all these parts is called waste management.

### **2.3 Waste Management**

Waste management mentioned in this study is the management of reversed materials in order to minimize the amount actually wasted and has to be gotten rid of. Waste management is a popular topic in the literature because of the raised awareness by the enterprises of the European Union, in both the EU countries and the countries which export to the EU (Zhu et al., 2007).

In the literature, there are some studies that are focused on understanding the nature of the waste (Mazzanti and Zoboli, 2008; Kahhat et al., 2008; Özeler et al., 2006; Pongrácz and Pohjola, 2004; Pitt and Smith, 2003; Burnley, 2001; Cardinali, 2001) while others try to suggest solutions to the waste problem (Chakrabarti et al., 2009; Bovea and Powell, 2006; Mohan et al., 2006; Joseph, 2006; Wright et al., 2005; Boyle, 2000; Haastrup et al., 1998).

Pitt and Smith (2003) have mentioned on a waste hierarchy by which reversed materials should be made use of and it is ordered according to the process order as:

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<sup>1</sup> Detailed information can be reached at:  
[http://ec.europa.eu/environment/waste/weee/legis\\_en.htm](http://ec.europa.eu/environment/waste/weee/legis_en.htm), last accessed: December, 2009.

<sup>2</sup> Detailed information can be reached at:  
[http://ec.europa.eu/environment/chemicals/reach/reach\\_intro.htm](http://ec.europa.eu/environment/chemicals/reach/reach_intro.htm), last accessed: December, 2009.

<sup>3</sup> Detailed information can be reached at:  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:037:0019:0023:en:PDF>, last accessed: April 2010.

reduce, reuse, recycle, energy recovery and finally disposal of the useless part of the reversed materials. While agreeing on the waste hierarchy, Boyle (2000) emphasizes the need to raise a general consciousness on environmental issues in both the public and the industry, and that waste management will be most effective only if all implementations are coordinated. Coordination is possible on a country basis and not on a global basis since the term “waste” does not mean the same thing in every country, while some products are seen as waste after some time or depreciation in some countries, the same products may be seen as a second hand market item, especially in underdeveloped countries (Chakrabarti et al., 2009).

Chakrabarti et al. (2009) call attention to the fact that when there is a lack of government leadership about waste management, it is a need for support from the private sector, waste traders, NGOs and the civil society. But of course, this also calls for the need for a general public awareness of the problem. How can a problem be solved when it is not perceived as a problem?

The main problem rises at this point. How do you bring awareness to people when their governments are not supporting these activities? In order to get people acting about these issues, a strong incentive might be necessary such as deposit and refund systems (Kahhat et al., 2008) that should be established by companies, which will encourage people to return the products they had purchased when there is anything wrong with it, instead of just throwing it away.

## **2.4 Green Drivers**

In the literature, numerous drivers such as economic concerns, legislation, social responsibility, ethics and stakeholder pressures have been suggested to understand the motivational elements that lead companies to perform green activities (e.g.

Walker et al., 2008; Ferguson and Toktay, 2006; Hervani and Helms, 2005; Sarkis, 2003; Carter, 2000; Bansal and Roth, 2000; Beamon, 1999; Sharma and Vredenburg, 1998; Walton et al., 1998). Among these, two stand out as being the most effective ones in motivating companies, which are legislation and economic concerns.

Although in many studies, authors have identified various elements as “green drivers”, Bansal and Roth (2000) bring in a criticism to these studies as not being exhaustive at what they research, suggesting that they lack specificity in terms of investigating the relationship between these drivers and motivation of companies, or whether a relationship exists among these drivers, and the circumstances in which the said drivers lead to motivation. Initiatives and benefits associated with the motivations for ecological responsiveness are given in Table 1. The table has been based on the study of Bansal and Roth (2000) and have been adapted combining the drivers suggested in several other studies by Zhu and Sarkis (2006), Hall (2001), Beamon (1999), Walton et al. (1998), and Sharma and Vredenburg (1998).



**Table 1 - Initiatives and Benefits Associated with the Motivations for Ecological Responsiveness**

Motivation	Ecologically Responsible Initiatives	Anticipated Benefits
Competitiveness	Housekeeping measures such as energy and waste management, source reductions resulting in the same output for the same level of output, eco-labeling and green marketing, the development of eco-products, and the adoption of environmental management systems (EMS), such as BS 7750 and the Eco-Management & Audit Scheme (EMAS).	Higher profits, process intensification, larger market share, lower costs, differentiation, higher share price, rent-earning resources and capabilities.
Legitimation	Complying with legislation, instating an environmental committee or environmental manager to oversee a firm's ecological impacts and advise senior management, developing networks or committees with local community representation, conducting environmental audits, establishing an emergency response system, and aligning the firm's image with environmental advocates.	Long-term sustainability, survival, license to operate, avoiding fines and penalties, lessening risks, employee satisfaction.
Social responsibility	Redevelopment of local community areas to greenfield sites, the provision of a less profitable green product line, donations to environmental interest groups and other local community groups, use of recycled paper, replacement of retail items or office products with more ecologically benign items, and recycling of office wastes.	Feel-good factors, employee morale, individual satisfaction.
Ethics	Establishing company (and supply chain) wide principles about ethical issues	Increased customer trust, feel-good factors
Stakeholder Pressures	Be transparent to stakeholders about what goes on inside of the supply chain, about the current processes, projects. Only then the trust can be built between the SC and stakeholders, enabling the stakeholders to express their expectations, before turning their backs because of the lack of the things they had expected	Increased stakeholder loyalty

Source: Adapted from Bansal and Roth, 2000

Although this is one study, it shows that laying options down this way might be useful in order to see the initiatives that can be adopted, and the benefits that can be

gained by each initiative, making it possible for firms to realize how they affect their business environment as well as the environment while carrying on their day to day activities.

There are also studies that have focused on all of the drivers and examined some specific angle of the subject, such as Walker et al. (2008), who have pointed out the lack of study about public sector's drivers, by evaluating each driver according to both the public, and the private sectors and pointing out the differences between them. The finding of the study is that although economic elements are the main drivers for the private sector, legislation is the one that drives the public sector.

Apart from the studies that examine several drivers in order to draw attention to different aspects of them, some studies examined these drivers and conclude that either one or two of them as being more effective as a motivational element. Especially legislation and economic drivers have been suggested to be the most powerful motivation elements in most studies (e.g. Ferguson and Toktay, 2006; Zhu and Sarkis, 2006; Sarkis, 2003; Bansal and Roth, 2000; Beamon, 1999; Sharma and Vredenburg, 1998; Walton et al., 1998). Stakeholder pressure has also been found to be an important motivational element in some studies (e.g. Zhu and Sarkis, 2006; Hall, 2001; Walton et al., 1998; Sharma and Vredenburg, 1998). Ethical motivation has also been suggested in some studies by Hall (2001), and Beamon (1999).

Drivers have been identified differently in studies in different levels of detail. For instance, there are several studies that name specific results of green initiatives such as reduced costs, and increased organizational performance (Hervani and Helms, 2005; Carter et al., 2000).

Participation of the whole supply chain is important in all green implementations, and since management is the entity that decides on company (and the supply chain, in case of focal companies), strategies, management support is at utmost importance when talking about green supply chain management, and this begs the motivation of the management to be green. This is why examining the motivational elements, drivers are significant (van Hoek, 1999; Zhu et al., 2008b).

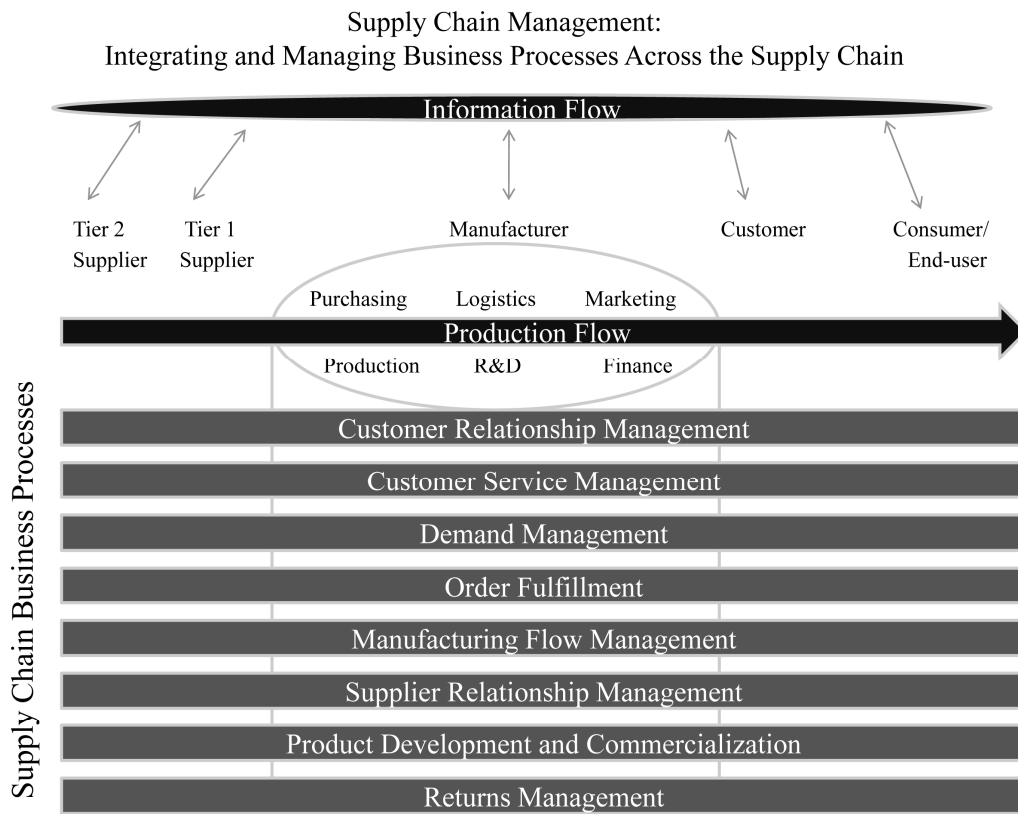
## **2.5 Supply Chain Models**

Several supply chain models have been proposed in the literature. Understanding the development of models through time is helpful for extending these models further or proposing new models. Therefore, the main supply chain models are reviewed in this study.

Although the idea of a supply chain model was put forth by the management of Hewlett Packard (Davis, 1993), this study had not been able to provide a supply chain that could be applied to other industries or even other businesses. After this attempt, Cooper et al. (1997) proposed a supply chain model called the GSCF - Global Supply Chain Forum- model and modified several points of it in two other studies (Lambert et al., 1998; Croxton et al., 2001). The GSCF model (Figure 1) successfully represented the supply chain and introduced the processes that are managed in the supply chain in details. After the GSCF, the SCOR model was proposed, filling the strategic decision gap of the GSCF model, especially enabling performance measurement by categorizing processes in four main titles as: plan, source, make, and deliver (Huan et al., 2004; Stephens, 2001).

In year 2008, the latest SCOR model, the version 9.0 was introduced, including one more process title: return (Figure 1).

Figure 1 – The GSCF Model

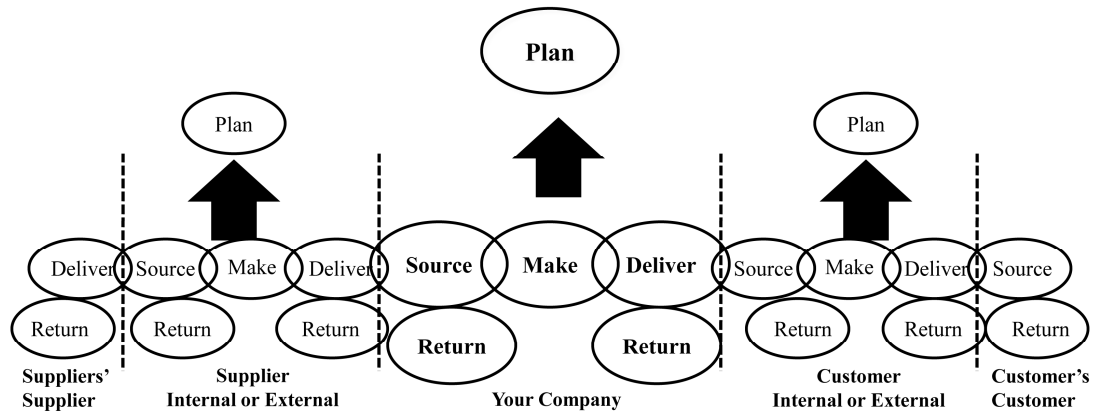


Source: Croxton et al. (2001)

This last addition serves the need of seeing the reverse flow(s) in the supply chain. Other studies also tried to answer special needs by proposing especially sector, product or aim based supply chains (e.g. Ellram et al., 2004; Baltacioglu et al., 2007; Logožar et al., 2006; Bansal and Roth, 2006; Talbot et al., 2007) started to be developed such as the model by Logožar et al. (2006) in Figure 1, compared reverse logistics with traditional logistics systems, in an attempt to include reverse flows in a supply chain model.

The model by Bansal and Roth (2000) in Figure 2, relating ecologically responsible initiatives and firms' motivations, also examined in this study.

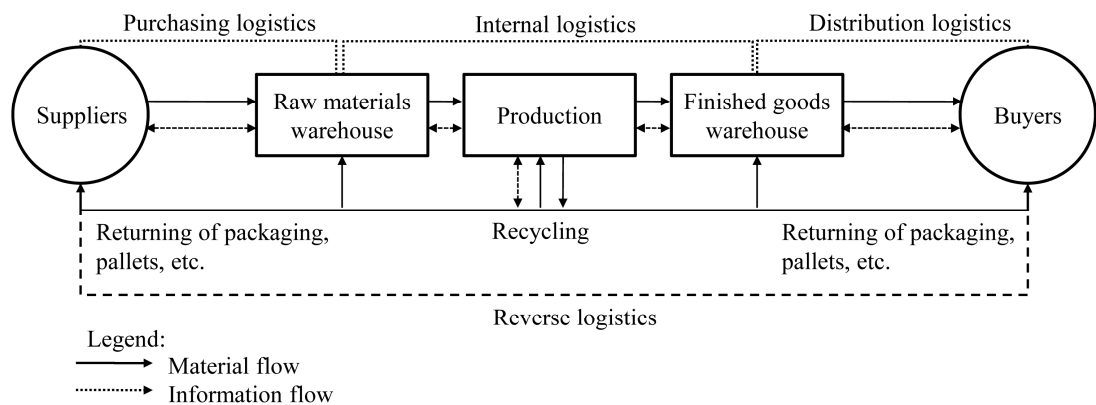
Figure 2 – The SCOR Model Version 9.0



Source: Supply Chain Council Official Website<sup>4</sup>

The study by Talbot et al. (2007), depicting the closed loop supply chain, in Figure 3.

Figure 3 – Reverse logistics in comparison with traditional logistics subsystems



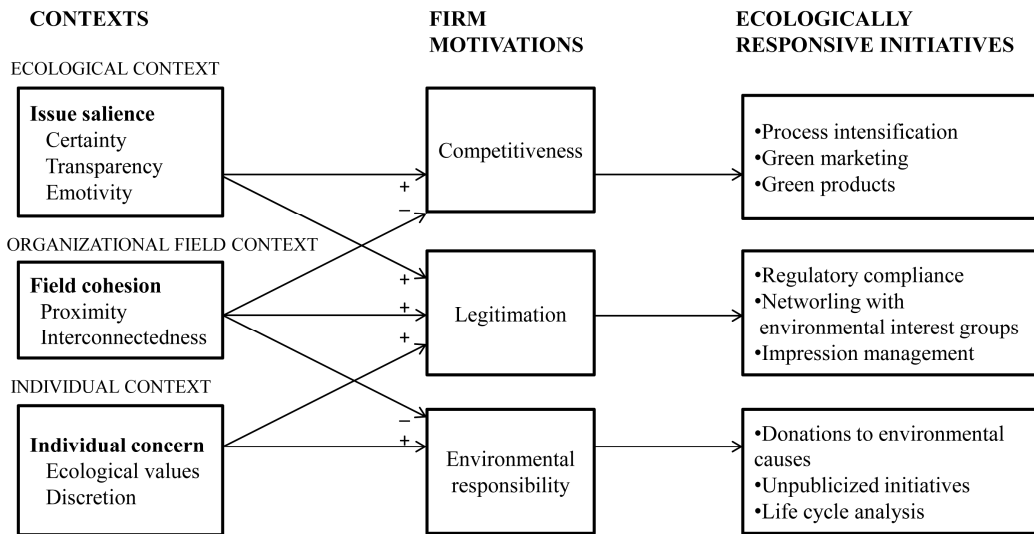
Source: Logožar et al. (2006)

Figure 4 shows the model by Bansal and Roth (2000), depicting the responses firms give under context and motivation pairs.

<sup>4</sup> Supply Chain Official Website:

<http://archive.supply-chain.org/galleries/public-gallery/SCOR%209.0%20Overview%20Booklet.pdf>  
(Last accessed: June 2010)

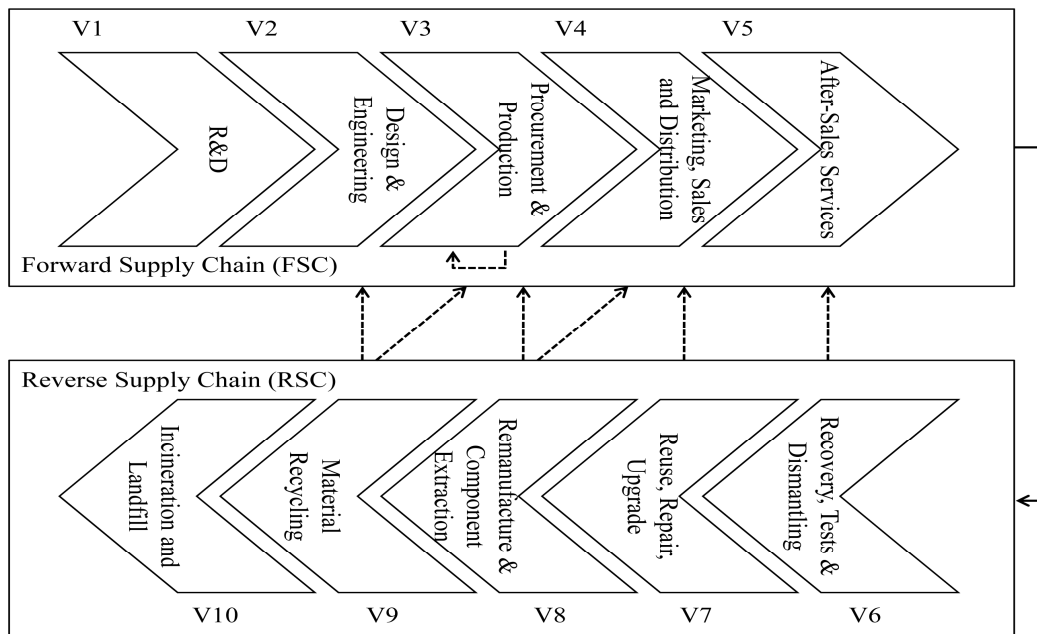
**Figure 4 – An Advanced Model of Corporate Ecological Responsiveness**



Source: Bansal and Roth, 2000

In a study by Talbot et al. (2007), the model in Figure 5 has been proposed in order to identify how the closed loop supply chain system works.

**Figure 5 - A Closed-loop Supply Chain Model**



Source: Talbot et al. (2007)

These “models”, as can be seen in the related figures, has served as a base for SCOR model version 9.0, as they were the prototypes of models that tried to depict the environmentally friendliness of the supply chain.

## CHAPTER III

### CONTEXTUAL ANALYSIS

#### 3.1 Consumer Focus

Talking about financial incentives of companies beg a focus on consumers as they are the “financial providers” of companies. The days when there were only a few types of products and consumers had to buy those are over for a long time. Consumers have the upper hand ever since companies have found themselves in an endless competition to win the fight over “who gets the customer”. As consumers have the final say about what they choose to buy, leading companies to act pro-environmentally will only be by creating environmental consumer demand, which will lead consumers to ask for environmentally friendly products and refuse to buy if the product does not meet this requirement. Only this way, companies will start to compete in terms of environmentally-friendliness, which in turn will benefit every human being, every creature living in the world and the Earth itself (H’Mida, 2009).

People are seeking technology’s help in every problem they face, but, this enlarges the problems at hand, especially in the case of environmental issues. Technology alone is not able to help protect environment without consumers’ willingness to participate in this mission and their consciousness about the issue (Maineri et al., 1997).



When we mention environmental consciousness, the conditions in which this consciousness turns into action need to be also stated. Through time, there have been studies which support the correlation between environmental consciousness and environmentally responsible behavior (Kallgren and Wood, 1986), and also some studies that object to this correlation (Maineri et al., 1997; Oskamp et al., 1991; Vining and Ebreo, 1990). When these studies are examined, it is possible to see that this difference in the findings of these studies is based on the different inputs that are used (different classes, different environmental variables), and that in fact being environmentally conscious does not necessarily lead to environmentally responsible behavior. As in everything else, proenvironmental behavior also comes with costs, and after a consumer has gained necessary consciousness about the environment, comes the main question: How much are the consumers willing to spend in order to do their part in protecting the environment (Chakrabarti et al., 2009)? Laroche et al. goes beyond this question and extend their research area to address to businesses that wish to target consumers who are willing to pay that extra price for getting an environmentally friendly product (Laroche et al., 2001).

As consumers are the destination in the supply chain flow, they are what matter the most.

There also exists a big obstacle in the way of determining whether people have pro-environmental behavior or not as people tend to lie if they are not performing certain activities because they are time consuming or costly although they are aware that they should be performing them.

Consumer beliefs, environmental attitudes, and political contacts with government figures and organizational membership concerning pro-environmental issues were identified as variables that predict “green buying” and were tried to be measured by conducting a survey in the study of Maineri et al (1997).

### **3.2 Sector Selection**

Considering the impact of economic motivational elements on the companies, and the way these elements affect companies’ business strategies, it makes sense to make companies understand that being green could also become a factor that would increase their competitiveness in the industry (Rao and Holt, 2005; Clendenin, 1997), increasing their economic performance. Defee et al. (2009) puts this situation down as: “As the importance of corporate social responsibility (CSR) continues to grow, companies have an opportunity to develop new areas for competitive advantage by viewing the supply chain as a closed-loop”. But of course this opportunity can only be realized only if the company is conscious of green approaches and how they would benefit from operating in a closed-loop supply chain.

In order for the companies to realize how beneficial green approaches may be, they should learn by example: seeing a competitor starting to steal market share from the company should be enough motivation for it. But of course, as the sector changes, since products have different components and different potential environmental harm, different industries will have to deal with waste management differently than other (French and LaForge, 2006). This is why, selecting a sector is important for this study, in order to be able to present a full waste management program for the sector’s supply chain.

*"Recent studies have shown that over the next two decades a majority of the world's manufacturing will be carried out in Asia"* (Zhu et al., 2008b, p.587). This brings an opportunity for companies but also, threatens them also as the environmental harm will be that much more if no precautions are taken. And also there is the fact that in emerging countries, industries which aim exporting are more likely to be motivated to be green, as importing countries, such as European Union countries set very strict rules that make the obeying of these rules a must, if they want to send their goods there. Since Asia production is usually aimed at the European Union, this brings us to the point where the waste management precautions should be started to be planned in Asian countries, including Turkey.

In order to raise general awareness in the public, the sector in which the pilot waste management processes will be carried on is important, as it will have the chance to prove how beneficial this can be for the companies, and motivate other companies to want to adapt their supply chains in order to be able to carry out these processes better than others.

At this point breaking products into two major groups will be correct: industrial and consumer goods (Kotler and Armstrong, 2009). Since consumers are the first target of this study, in order to raise the public awareness, consumer goods will be the focus point of this study.

In order to pick a product group of the consumer goods, the method used by McMichael et al. (1998) will be useful: grouping the sector according to the harmfulness level of product groups. The actual data about the carbon emission of

different sectors was referred from the European Commission<sup>5</sup>, showing general results as well as Turkey's. According to both of these, the most environmentally harmful sectors were the automotive, electrical and electronic equipment and energy industries.

In the literature, much focus is put on electrical and electronic equipment (EEE), since production of EEE is one of the fastest growing areas, thus the waste generated from it (WEEE) is also growing (Hischier et al., 2005). EEE involves all personal and in-house use electrical and electronic equipment, such as computers, televisions, refrigerators, etc. Thus, WEEE is these items' discarded state.

Since EEE are a part of everyday life, and is continuing to grow at a very high rate, examining this product group and applying the waste management plan on these products might prove to be useful in terms of raising public awareness and increasing the competitiveness and economic performance of the supply chains that adopt this system, and in turn lead efficient waste management throughout the supply chains to become a competition element between supply chains.

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<sup>5</sup> [http://ec.europa.eu/energy/publications/doc/statistics/ext\\_co2\\_emissions\\_by\\_sector.pdf](http://ec.europa.eu/energy/publications/doc/statistics/ext_co2_emissions_by_sector.pdf), last accessed: March 2010.

## CHAPTER IV

### METHODOLOGY

It is common knowledge that research methods are classified under two main groups as quantitative and qualitative research. Quantitative research methods seek to reach results with the use of mathematical models, theories and hypothesis, while qualitative research methods explore the “human” side of the problem at hand, by observation or interviews – in several forms (Blaikie, 2004; Creswell, 2002).

Qualitative research allows the researcher to go beyond what can be seen in the first glance; examine the reasons of behaviors and thoughts of individuals or groups. Qualitative research also bears a flexibility that cannot be found in quantitative research, as it takes into account the human factor. Another advantage of qualitative methods is its ability to capture the unexpressed thoughts or perceptions by observation, allowing the researcher to get a deeper understanding of the issue, from the eyes of the subject of the study (Creswell, 2002; Silverman, 1997).

Most commonly used qualitative methods can be named as; in-depth interviews, case studies, the Delphi method, focus groups, etc.

In the supply chain literature, it is possible see that the most commonly used research method is the quantity (e.g. Du and Evans, 2008; Zhou and Wang, 2008; Alshamrani, 2007; Álvarez-Gil, 2007; Balakrishnan et al., 2004; Boyaci and Gallego, 2004; Ha et al., 2003; Autry et al., 2001). As the aim of this study is to get an understanding of

how supply chains and environmental issues are perceived among companies in the Turkish market, this subject could be researched by the use of a qualitative method to begin with.

Then several methods were reviewed in order to determine the most appropriate method for this study; such as in-depth interviews, the Delphi method and focus group studies.

In-depth interview method was eliminated as this method could jeopardize the credibility of this study as people tend to try to say what would be the best answer for any question when they are asked; especially when they face the questions alone.

Another method that was considered was the Delphi method since it appeared in some studies, where the thoughts of companies were tried to be captured. Although this method has important advantages such as anonymity, iteration, and controlled feedback (Rowe et al., 1991; Geist, 2010); its disadvantages had the potential of endangering the success of this study if the Delphi method was used. These disadvantages were: potential for sloppy execution, poor choice of panelists, unreliable result analysis, limited value of feedback and consensus, instability of responses among consecutive Delphi rounds, fatigue because of iterative questionnaires (Rowe et al., 1991; Geist, 2010). In addition to these disadvantages the facts that there will be no control over who answers the questions and that there is no chance of assessing whether questions are understood as intended also prove themselves to be probable disadvantages of the method.

Lastly, focus group method was thought of and conducting focus groups for this study was thought to be advantageous as focus group is an appropriate tool for studying

organizational change, and the fact that they create a brainstorming atmosphere (Burhanna et al., 2009; Kalfoglou et al., 2008; Bolívar-Muñoz et al., 2007; Barbour, 1999), which is a desired state in such a study because the main aim is to get a good understanding about the real thoughts and tendencies of businesses in the Turkish market.

In order to conduct a successful set of focus groups, one must firstly understand how the system of focus group works. During the research phase of this study about focus groups, the literature has been reviewed in order to find relevant informative texts and studies that have been conducted by the use of focus groups (Burhanna et al., 2009; Kalfoglou et al., 2008; Bolívar-Muñoz et al., 2007; Wilkinson, 2004; Langford and McDonagh, 2003; Barbour, 1999).

Flexibility is a scarce characteristic in research methods, which focus groups has as the moderator is able to guide the respondents and get hint about what else could be talked about in the context of the research, that did not occur to the researcher beforehand (Langford and MacDonagh, 2003; Kevern and Webb, 2001; Reed and Payton, 1997).

Another advantage focus group studies allow the researcher to take advantage of is the in depth understanding of feelings and thoughts of the respondents and the ability to let the researcher grasp tacit reactions (Carlock and Perry, 2008; Langford and MacDonagh, 2003; Kevern and Webb, 2001; Wall, 2001).

The most important advantage of focus groups is its ability to grasp the opposing thoughts of attendants as well as the ones which are in accordance with primary views of the interviewer (Lehoux et al., 2006; Langford and MacDonagh, 2003;

Wall, 2001; Frankland and Bloor, 1999; Reed and Payton, 1997). Another factor that proved focus group study was an appropriate method for this study was the wide assortment in the methods of capturing feedback that are collected in a summary table by Langford and McDonagh (2003).

Besides the advantages, focus group study also has some minor disadvantages and difficulties; especially concerning the setting up of meetings.

Setting up meetings when the panelists are executives becomes a challenge because of lack of interest by the panelists or scheduling problems, due to the executives' busy schedules, which is an important disadvantage of focus groups (Geist, 2010).

Langford and MacDonagh (2008) mention on three disadvantages while talking about focus groups: discussion content may deviate gravely from what the researcher had in mind, dominant group members may turn the focus group study into an interview kind of thing, and lastly the possibility that the quality of different focus groups may be uneven. The former two disadvantages may be neutralized by the successful management of the dynamics between individuals by the moderator while the latter may be overcome by having numerous focus group studies, enabling the researcher to be able to eliminate any unqualified session and not evaluating it in the analysis of the study because of its nonsuitability.

#### **4.1 Design of the Study**

In this study, apart from literature review, focus group studies were arranged, in order to understand the level of environmental consciousness of firms and assess the potential level of participation if a waste management system was to be implemented in their supply chains. Consulting with sector representatives was also seen to be



beneficial in the context of this study, in terms of understanding current implementations about the environment and social responsibility.

Focus groups were conducted to serve this goal. Focus group methodology has been selected as it will enable the participants to be observed for tacit reactions. Furthermore, since the participants in the same focus group were from similar sectors, a common discussion atmosphere was created, which enabled the participants to be inspired by what another participant said, creating kind of an avalanche effect. This was a wanted situation in this study since the main aim was to understand the real thoughts of the industry representatives about environmental issues.

The literature was reviewed to see the applications of various focus groups in various fields, in order to get the feel of the possible usage areas of the method. Publications on focus groups were also reviewed in a great detail in order to fully understand the method (Langford and MacDonagh, 2003; Barbour and Kitzinger, 1999).

Several master's and doctoral thesis (e.g. Nazario, 2009; Duty, 2009; Bradford, 2008), which adopted focus groups as their methodology, were also reviewed; as they involved sample questions, which made it possible to understand the general style of asking questions that would be suitable for a focus group.

After deciding on the general themes that were desired to be talked about during the focus groups, the questions were formed over several meetings between the researcher and the supervisor. The full list of the questions that were used during the focus groups can be found in Appendix-C and Appendix-D, in English and Turkish versions, respectively.

The flowing logic of the questions was tested with a contact from the industry and minor changes were made to have their last forms that are seen in the appendices.

#### **4.2 Participants of the Focus Groups**

Izmir was selected to be the application's location as the researcher and the supervisor resided in this area and the time constraints limited the flexibility about travelling in order to conduct the study. The electrical and electronic equipment (EEE) manufacturing companies operating in Izmir Ataturk Organized Industrial Zone (AOSB) and Ulucak Industrial Zone (USBI) were searched for. These two districts are two of the districts that EEE manufacturers have gathered in Izmir, representing both the high and low end manufacturers that are present in Turkey. 15 companies' general managers were contacted in total, and 8 returned the request. So it was decided by the researcher and the supervisor to split these representatives into two focus groups.

As the focus group study was designed to include some questions about supply chains, environmental issues, and companies' general thoughts about these; the appropriate participants were identified as high level managers since they would hold the most extensive information about the company.

#### **4.3 Logistics of the Focus Groups**

The meetings took place in the facilities of one of the participant from each session. These participants have offered to use their own facilities, making remarks that they will be able to participate only if the meeting could take place in their own facilities, and the rest of the session participants were called and asked whether they could participate under this condition, which resulted positively.

The sessions were created by grouping the participants according to their free time, and although this coordination seemed hard, with the help and tolerance of the participants, could be done with no extra difficulty.

The focus groups needed to be tape recorded and the researcher felt the necessity that the participants felt comfortable during the sessions. The costs incurred because of these were covered by the researcher.

#### **4.4 Data Analysis and Results**

Before going into the details of the data analysis, it will be useful to see the concepts that were talked about that can be found in the literature. This will give an idea about the extent to which the subjects were associated with which concepts.

The expressions about the concepts were reviewed in the literature in order to allow the convertibility of the expressions used in the focus groups studies into academic terms. This literature review is given in details below.

##### **Waste:**

- Solid waste (Du and Evans, 2008; Bovea and Powell, 2006; Hastrup et al., 1998)
- Industrial waste (Tonglet et al., 2004; Linton et al., 2002)
- Reusable/recyclable (Chan and Chan, 2008; Du and Evans, 2008; Bovea and Powell, 2006; Sarkis, 2003; Linton et al., 2002; Phillips et al., 1998)

##### **Advantages of being green:**

- Legal conformity (rules, regulations, legal):
  - compliance with rules/regulations (Barraclough and Morrow, 2008; Vais et al., 2006; Richey et al., 2005; Alter, 2000; Walton et al., 1998),
  - meeting regulations (Tuttle and Heap, 2008; Srivastava, 2007; Vais et al., 2006; Alter, 2000; Walton et al., 1998),
  - legal adoption (Walther and Spengler, 2005),

- implementation of legal requirements (Chakrabarti et al., 2009; Manga et al., 2008; Walther and Spengler, 2005),
- following the rules (Chakrabarti et al., 2009; Dincer and Dincer, 2007; Chouinard et al., 2005),
- adherence to rules (Walker et al., 2008),
- operate within the legal constraints (Roarty, 1997)
- Better financial activity (economic, financial):
  - economic benefits (Zhu et al., 2008c; Tan and Kumar, 2006; Zhu and Sarkis, 2006),
  - economic viability (Tan and Kumar, 2006; Gupta et al., 1998),
  - making economic sense (Tan and Kumar, 2006),
  - economic motives (Ravi and Shankar, 2005; Fransson and Gärling, 1999),
  - economic factors (Srivastava, 2007),
  - economical feasibility (Guide Jr. et al., 2003; Krikke et al., 1998),
  - economic development (Chouinard et al., 2005),
  - economic gain (Chouinard et al., 2005; Rogers and Tibben-Lembke, 2001),
  - economic outcomes (Tuttle and Heap, 2008),
  - economic merits (Roarty, 1997)
  - economically/financially sustainable (Chakrabarti et al., 2009; Moczygemba and Smaka-Kincl, 2007; Zia and Devadas, 2007)
- Better image (image, prestige, perceive):
  - corporate image (Fernando, 2010; Hong et al., 2009; Barraclough and Morrow, 2008; Kumar and Putnam, 2008; Robins, 2008; Zhu et al., 2008c; Dincer and Dincer, 2007; Moir, 2001; Roarty, 1997),
  - public image (Walker et al., 2008),
  - promoting a green image (Roarty, 1997),
  - brand image (Östlin et al., 2008; Li and Olorunniwo, 2008; Ravi and Shankar, 2005),
  - green/environmental image (Zhu and Sarkis, 2006),
  - reputation (Moir, 2001; Sharma and Vredenburg, 1998)

### **Green drivers:**

- Economic:
  - economically driven (Srivastava, 2008; Bellmann and Khare, 1999)
  - market pressures (Defee et al., 2009; Seadon, 2006)
  - customer requirements (Defee et al., 2009; Zhu et al., 2007; Seadon, 2006)

- consumer pressure (Srivastava, 2008; Hall, 2001; Walton et al., 1998; Green et al., 1996; Lamming and Hampson, 1996)
- increased profitability (Östlin et al., 2008)
- Competitiveness:
  - competitors' environmental practices (Zhu et al., 2007)
  - competitive advantage (Defee et al., 2009; Ferguson and Toktay, 2006; Sarkis, 2003; Sharma and Vredenburg, 1998; Lamming and Hampson, 1996)
  - increased market share (Östlin et al., 2008)
- Legitimation:
  - legislation (Defee et al., 2009; Östlin et al., 2008; Zhu et al., 2008a; Green et al., 1998)
  - regulatory (Srivastava, 2008; Hall, 2001; Min and Galle, 2001; Beamon, 1999; Walton et al., 1998; Green et al., 1996)
  - legislative (Tudor et al., 2008; Hall, 2001; Min and Galle, 2001; Beamon, 1999; Walton et al., 1998; Green et al., 1996)
  - ISO 14000 certification (Montabon et al., 2000)
- Social responsibility: (Pokharel and Mutha, 2009; Chan and Chan, 2008; Castell et al., 2004; Ferrer and Ayres, 2000)
- Ethics:
  - ethical responsibility (Östlin et al., 2008)

### **Barriers to be green:**

- Economic (Tudor et al., 2008; Chan and Chan, 2008; Ravi and Shankar, 2005; Ahmed and Ali, 2004; Rogers and Tibben-Lembke, 2001)
- Cost (Walker et al., 2008; Zhu et al., 2007; Rogers and Tibben-Lembke, 2001; Min and Galle, 1997)
- Inadequate facilities (Darby and Obara, 2005)
- Lack of management support (Álvarez-Gil et al., 2007; Ravi and Shankar, 2005; Florida et al., 2001; Rogers and Tibben-Lembke, 2001)
- Lack of understanding/knowledge (Hicks, 2007; Tonglet et al., 2004; Rogers and Tibben-Lembke, 2001; Williams, 2001)
- Lack of motivation (Ravi and Shankar, 2005; Tonglet et al., 2004)

According to these concepts, Table 2 was formed, in order to be able to assess the density of the mentions about each concept. As the focus groups were conducted in Turkish, the Turkish version of Table 2 can be found in Appendix-F.

**Table 2 – The themes and general concepts**

		<b>Total Mentions</b>	<b>Theme Total Mentions</b>
<b>Green Drivers</b>	<b>Economic:</b>	<b>11</b>	<b>33</b>
	customer requirements	7	
	economically driven	3	
	market pressures	1	
	consumer pressure	-	
	increased profitability	-	
	<b>Competitiveness:</b>	<b>10</b>	
	competitive advantage	6	
	competitors' environmental practices	3	
	increased market share	1	
	<b>Legitimation:</b>	<b>10</b>	
	ISO 14000 certification	7	
	legislative	3	
	legislation	-	
	regulatory	-	
	<b>Social responsibility:</b>	<b>2</b>	
<b>Ethics:</b>	<b>0</b>		
ethical responsibility	-		
<b>Waste</b>	Reusable/recyclable	<b>27</b>	<b>27</b>
	Solid waste	<b>0</b>	
	Industrial waste	<b>0</b>	
<b>Barriers to be green</b>	cost	<b>19</b>	<b>25</b>
	lack of understanding/knowledge	<b>4</b>	
	inadequate facilities	<b>1</b>	
	lack of management support	<b>1</b>	
	economic	-	
	lack of motivation	-	
<b>Advantages of being green</b>	<b>Legal conformity:</b>	<b>8</b>	<b>17</b>
	operate within the legal constraints	4	
	following the rules	3	
	meeting regulations	1	
	legal adoption	-	
	implementation of legal requirements	-	
	adherence to rules	-	
	compliance with rules/regulations	-	

**Table 2 (cont.) – The themes and general concepts**

		<b>Total Mentions</b>	<b>Theme Total Mentions</b>
<b>Advantages of being green</b>	<b>Better financial activity:</b>	<b>3</b>	<b>17</b>
	economic factors	2	
	economic benefits	1	
	economic viability	-	
	making economic sense	-	
	economic motives	-	
	economical feasibility	-	
	economic development	-	
	economic gain	-	
	economic outcomes	-	
	economic merits	-	
	economically/financially sustainable	-	
	<b>Better image:</b>	<b>6</b>	
	corporate image	3	
	public image	1	
	promoting a green image	1	
	green/environmental image	1	
brand image	-		
reputation	-		
<b>Total Concepts Mentioned</b>			<b>119</b>

**Waste**

In the waste theme, the main objective was to evaluate what waste is in the sector representatives' minds. This was particularly important because one of the aims of conducting focus groups were to check whether waste management could be a good starting point if the whole supply chain was to be turned to green and determine the point where the efforts should be started. Because if there is no understanding of what waste is, then the starting point simply must be to give the waste management notion to the sector.

**Table 3 – Mentioned concepts about waste**

		<b>Total Mentions</b>	<b>Theme Total Mentions</b>
<b>Waste</b>	Reusable/recyclable	<b>27</b>	<b>27</b>
	Solid waste	<b>0</b>	
	Industrial waste	<b>0</b>	

In the focus groups, the general understanding of waste consisted of the waste that is generated during the production process. Although all of the mentions involved information about the reuse of these materials, as can be seen in Table 3, these were generally understood as the materials that become unusable during the production process and that could be made reusable by the help of some extra processing on the wasted material. So the products that are reversed in the supply chain after the point of production were not considered by the participants. There was a little emphasis on the waste as the product at the end of its life, but these were not thought to be the responsibility of the manufacturer.

It was interesting to see that no participant ever used the terms industrial waste or solid waste; this may have been due to their concentration on the industrial area so much that they may be failing to think about the consumer market.

A term that was frequently associated with waste was damaged materials. This makes sense since the general idea about the definition of waste was the materials that became unusable during the production process.

There were also mentions about the different kinds of waste as being tangible and intangible waste, which came as a surprise because of the waste definitions made. This mention on this issue was also strengthened by the idea that the intangible



wastes are the ones which have the most negative effects on the firm. This thought has brought the impression that the waste is in fact very well understood by some participants, as understanding and accepting the existence of intangible wastes requires a great deal of awareness of the issue.

There were two waste definitions that were used, which rendered understanding what waste and waste management impossible: the unnecessary parts of a material, and the materials that are no longer usable in any process and that could never be recycled. These definitions both are correct if they are used while explaining the state of the waste after it is examined and decided if it can be recycled/reused or if it should simply be disposed of. On the other hand, there were also mentions about the necessity of dividing waste as recyclable/reusable and useless. This was called as scrap by the participants.

The observations showed that understanding waste and assessing whether waste should be managed or not was thought to be ad hoc and there was a certain motivation on most participants to say what they felt was necessary to be said: Yes, waste should be managed. But from the explanations on how waste should be managed, it was observed by the researcher that management of waste was not understood clearly.

One of the participants mentioned on a strategy they were following: a company's waste management ability is an important criteria for them during the supplier selection process, they are calling this as being lazy but in fact, what they are doing is a sign of focusing on the firm's core competency, and also a sign of a decent understanding of supply chain as this proves that the firm sees their

suppliers as business partners rather than just another company. Still, the fact that they call this approach laziness brings lack of awareness and knowledge into mind.

Another term that was frequently referred to while talking about waste, waste management and green processes, was ISO 14001 certification. Although it is correct that this document certifies that the related firm has gone through some restructuring process in order to become more environmentally friendly and that it is managing its operations this way, it was observed by the researcher that the only criteria that the sector representatives had in mind about a firm being environmentally friendly or not.

Thus, although some participants have shown that they are aware of what waste is, even they had a confusion about really understanding what waste and waste management are since they associated managing waste and being environmentally friendly with the possession of ISO 14001, which is not entirely wrong, when the fact that ISO 14001 does impose some rules on companies that possess it. But the critically wrong approach here is the tendency to call all the ISO 14001 bearers environmentally friendly and the others non-environmentally friendly.

Nevertheless, when asked about whether understanding waste and managing it effectively would lead companies to manage their processes in a more environmentally friendly and efficient way, the responses were positive.

The main thought was, if the firm knew how harmful it is to have too much waste for the firm and the environment, even the purchasing activities would be

performed more carefully, paying attention to not ordering more than necessary to avoid waste generated by expired materials.

A statement made by one of the participants was creative and intelligent. The main idea in this statement was the fact about wastes telling the story of a production’s success. Do the wastes need to be that much? Or are the types of wastes generated expected? Is anything wrong with the waste types? This understanding also helps to evaluate whether the type amount of waste could be decreased through engineering work or not. This engineering work will also include design. The design of the products could be made thinking about the overall environmentally friendliness of the product and its recyclability.

**Advantages of Being Green**

The advantages that were mentioned in the focus groups were: profit increases, economic production, increased competitiveness, economic advantages, social responsibility, legal responsibility, and commercial prestige. And the distribution among three main groups is shown in Table 4.

**Table 4 – Mentioned concepts about the perceived advantages of being green**

		<b>Total Mentions</b>	<b>Theme Total Mentions</b>
<b>Advantages of being green</b>	Legal conformity	8	<b>17</b>
	Better image	6	
	Better financial activity	3	

It was claimed that being environmentally friendly also creates added value for the firm such as innovative technology development and increased negotiation

power when talking with a potential customer. It was stated that if the production technology was designed in order to minimize losses in the production, which in turn will increase the firm's profitability. With the more careful and green design of the products, an economic advantage for the customers is also created, allowing the product to be more energy efficient.

Another factor that helps businesses to have more negotiation power is understanding that price is not the only instrument by which a company may compete in the market; the company should also be creating different values for the customer. These will help the firm to increase its market share by setting itself apart from its competitors.

Competition allows companies to be motivated to become better at their operations with every step they take in order to stay competitive in their market. This can also be applied to green concepts once the market starts to seriously demand environmentally friendly products and/or services. Thus, it can be said that being green also creates a competitive advantage for the business.

It was also mentioned that minimization of the intangible wastes allow more economic production in the firm. The example was given from the USA, a textile factory that operates fully automated, with only a control engineer and some maintenance workers. As the facility is fully automated, no light is necessary in during the production, so glass panes were placed on the roof to allow no lights to be used during the day and only the necessary lamps for each machine were turned on by the engineer or the workers occasionally. This saving on the

electricity usage alone has allowed the company to become more competitive in its market.

From the declarations of some participants about how the Turkish companies, especially SMEs, do not feel they are being monitored or controlled, and that they believe their illegal deeds will go unpunished, and how the punishments are far from being deterrent, this brings these into mind: If a general awareness is not created about environmental issues; if a gain is not created for the firms, and if the feeling that firms are not being controlled and/or it is not being monitored and controlled, firms will continue to do whatever is necessary to avoid having to make the extra efforts to comply with rules and regulations. So in short, if these conditions are not fulfilled, nothing will change.

Considering all the advantages that were associated with being environmentally friendly, the initial investment decisions must be made, keeping the potential gains in mind such as; the guarantee of tying a new customer to the firm as soon as the customer sees how the system works, creating an admiration feeling. On top of this, the profit and gain from the reduction of waste will likely to allow the investment to be like free of charge for the company.

### **Green Drivers:**

Maybe one of the most important topics to receive the views of the sector representatives was the green drivers. The mostly mentioned green drivers (Table 5) were in accordance with the findings in the literature review.

**Table 5 – Mentioned concepts about the green drivers as perceived by the participants**

		<b>Total Mentions</b>	<b>Theme Total Mentions</b>
<b>Green Drivers</b>	Economic	11	<b>33</b>
	Competitiveness	10	
	Legitimation	10	
	Social responsibility	2	
	Ethics	0	

- **The development of green issues:**

In order to understand why some green drivers are seen as drivers by companies, it is necessary to understand how the dynamics in the system and try to asses why they are saying what they are saying. Thus, before asking the participants what motivated them in being environmentally friendly, they were asked about their thoughts about the development of green approaches.

The main idea while answering this question was the effect of the heavy costs of investments in the first run and how the firms, especially SMEs' need for support about these initial investments. The idea that was generally put forth was the limited understanding of the government of supporting businesses about green issues. What the government did was to assign some companies about disposal of materials, license them in for example the disposal of paper wastes and force companies to contact these firms and give their papers to these bodies. On the other hand what the businesses thought of support was put forth with an emphasis on how the government could support firms about these with for example tax reductions.

It was also mentioned that Europe tends to send environmentally hazardous sectors abroad, to get rid of the pollution caused by these sectors. Turkey is a country that is in the target area of Europe for such applications. This suggests this development possibility: once Turkey's environment and the related issues become so burdensome and impossible to be denied, maybe the people will become more environmentally friendly than ever and try to sort this out by voluntarily applying the currently imposed regulations to help save the environment.

It was also suggested that these environmental moves are not purely green conscious moves, since if it was, the earlier investments would be stopped and the new, green investments would start to be implemented immediately. But instead of this, the current investments' expiration dates are being waited for, in order to gain some profit out of it before turning these investments into ash. This suggests that for the current situation to change for Turkey, first the current non-green investments will have to bear fruit.

Another important element that portrays the slight improvement in Turkey's regard for green issues is the fact that although only purchasing specialists dealt with supplier selection in the past, nowadays, quality specialists also get mixed up in the process.

The main issue is about green awareness. Once the firm is aware enough, green production is made possible by R&D studies too. So the main thought was to raise the awareness first, and then there should be no problem. While talking about awareness, the participants were also talking about the awareness of the customers

as in the demand of the customers. It can therefore be said that the more the market will demand to have green products and/or services, the more developed the firms and sectors will become in terms of being environmentally friendly.

- **The motivators:**

The suggested green motivators for companies were in accordance with the drivers that are stressed in the literature: economic and legitimation. In the economic sense, the most talked about motivator was the demand of customers (or potential customers). The general idea was; if the customer demands products that are produced according to RoHS, then the company will be motivated to follow these directives, especially in the case the customer is potentially a highly profitable customer. On top of it, there is this fact that once the customer asks the company for products that comply with RoHS, there is no chance for the company to say that they do not provide such products, because it is mandatory to produce according to this directive. In other words, a company may dodge complying with the RoHS directive until there is a demand for it.

Another idea came as; being green is a new potential source of competitive advantage so in countries and companies where there is a certain level of environmental awareness, companies see being green as an opportunity to create competitive advantage in the market. They see this opportunity as a chance to create more innovative products by focusing on their energy consumptions, carbon emissions and recyclability level.

The participants also talked about how green issues are a new trend in the whole world. But this is such a trend that only the ones who are aware and have the



financial power at the same time, are able to follow. So if there is a demand for these products and the company knows that they will be rewarded with increased profits and probably a better image in the market, they will be willing to follow this trend. But understanding the concept of having a better image in the market because of environmentally friendliness lies within environmental awareness once more.

- **The consumer side:**

The factors consumers consider while making a purchasing decision are the price and its effect on health. And in fact, the rumors about products' effect on the human health shape these decisions. So usually not the real effects but rather rumored effects play a role in the decision making of consumers while purchasing. So it could be said that purchasing decisions are made not realistically but they are made emotionally. In developed countries a new determinant has also been introduced into the market: the product's effect on the environment. The awareness level is still in question, whether these products are sought for the right reasons or not, but the consumers pay attention to these kinds of effects too. This awareness level can only be increased by proper education, starting from elementary school, making environmentally friendliness an important concern of individuals.

But the current situation is such that, the aware people usually are not able to even affect their relatives or friends' decisions on these issues. This leads to thinking this awareness is individual and thus in order for companies to become truly green, every employee needs to be environmentally conscious.

### **Barriers to be Green**

The most common term associated with the barriers of being green was cost. As can be seen in Table 6, which is the factor that is mostly considered while making an investment or going through a restructuring. But there was a good comment about this fact. Some participators agreed that when the country's environment, its well being is at stake, these costs should not be first priority while deciding whether to go that extra mile to become more environmentally friendly or not.

**Table 6 – Mentioned concepts about the barriers to be green**

		<b>Total Mentions</b>	<b>Theme Total Mentions</b>
<b>Barriers to be green</b>	Cost	19	<b>25</b>
	Lack of understanding/knowledge	4	
	Inadequate facilities	1	
	Lack of management support	1	
	Economic	0	
	Lack of motivation	0	

But they have also noted that this thought is not common in the sector and thus, environmental awareness requires a cultural change and therefore education in order to be placed as a high priority concern in people's and companies' lives.

An interesting barrier was named as the restructuring of disposal licenses. The new system does not allow one company to hold several products' disposal permissions at the same time, which contradicts with the current and accustomed system of having scrap dealers dealing with plastics, metals and paper at the same time. This restructuring was made in such a thoughtless way that it has failed to realize by the implementation of the new system, all scrap dealers' established

orders in which they hope to earn revenue from one product when the other one cannot be found in the market. Not being compatible with the needs of the sector, the system could not be started, and still is an argument subject. The most unsuccessful aspect of the new system is that there is a need for coordination between different dealers if the system was ever to be implemented, because of the fact that most of the products bear different kinds of materials on them at the same time. So if there is no cooperation between these different dealers, there will be an increase in the waste levels since the dealer will take the part of the product that its license allows it to, and then try other ways of disposing of the other parts. This brings “timely communication” into the picture. If such a rooted restructuring is going to be implemented, the related sector should be informed about this in advance, in order to allow them some time to adjust themselves to the changing conditions, rendering a possibility of establishing coordination between these dealers.

Another important issue that was named as a barrier was non-deterrent penal sanctions. The general opinion was that these “comical” penal sanctions will only create an even more relaxed sector, knowing whatever they do; they will get away with it. Another thing that was mentioned about this was that these sanctions are only implemented on a random kind of way since there is still not enough monitoring and controlling of the businesses. So while saying it is illegal to carry out production activities in non-licensed and outside of permitted sites, this cannot be stopped since these go unnoticed, posing a greater danger to the environment and health since these are left unseen and close to the living sections of the city.

So the dangerous wastes these types of entities dispose of are usually disposed to the street.

As in the dealers' case, SMEs will need to come together in implementing green processes since the necessary investments will be financially challenging for each individual SME. But the thought was that if there was a way to bring these SMEs together, then there will be cooperation between them and this will enable them to overcome things together, that they could not as individual companies. Another way this financial challenge could be dealt with if the government supported SMEs initiative when they try to restructure themselves to become more environmentally friendly, for instance with tax reductions, taking the load off small businesses when they try to become green.

Especially because of all the investments required, being green is perceived as a luxurious concept, a concept that can be chased after only by high revenue companies. Sadly, this is truly the case for Turkey.

Another barrier was the technology and the R&D related to these new trends was not in emerging countries such as Turkey, China and India. This makes companies foreign-dependent, in fact amplifying the problem at hand.

### **Awareness**

- **Green companies:**

There were some companies named that were thought to be environmentally friendly by the sector representatives, but the interesting issues was that these companies were the ones normally portrayed as being green in the media, with

their marketing communication tools aiming to create the perception of being green, so even from inside the sector, the representatives were not able to do more than just say the names of these companies. Not even object to these environmentalist claims of these companies, which prove there is a great deal of lack of knowledge because usually, when companies are given a chance, they tend to criticize other companies.

Another very interesting issue that arose during this discussion was the association of being environmentally friendly with the possession of ISO 14001 certificate, which was discussed earlier in the discussion about the definition of waste.

- **Rules and regulations:**

The related terms with these issues were ISO 14001 -which is not a regulation-, RoHS and WEEE.

They say that the companies who have ISO 14001 certificates are bound by its rules and thus this provides regulation for those companies. But the statement in this lacks the consideration for the companies who do not have such a certification. If it was true that ISO 14001 acts as a set of rules, then under this assumption, this would be saying that the companies who do not possess this certification are not bound by any regulation.

An interesting thing was that when asked about regulations, the representatives started to tell about different applications in different countries such as Germany's advanced monitoring and control system about the waste disposal of companies by the means of licensed companies and Norway's strict policies about

accumulators' reverse flow in the supply chain. The fact that these applications were spoken of when the subject was regulations brings into mind that this information are not gathered with aware acquaintance, but rather they are spread like rumors. Because if they were obtained consciously, then most probably the names of the related regulations or what they consisted could be talked about also. This is a dangerous situation because if there are some people who should be knowledgeable about these issues, it is these people, sector representatives each serving as a member of the top management in their companies.

All applications mentioned were not from foreign countries but also had some examples from our country. For example when the Norway example was given, another participant encountered this example by saying Turkey is in fact doing a better job than Norway about the collection of accumulators by forcing a stricter returns policy such as giving a new accumulator only if an old one is returned.

One participant mentioned that once a year, each company declares their general waste types and related quantities, which then is directed to the licensed disposal companies, to collect these wastes from manufacturers. But there are doubts about the application of this system since the monitoring and control of the system is done so loosely or not done at all, or it is done randomly, since the businesses who do not comply with these rules and regulations are still able to get away with it.

The awareness and knowledge about these issues are so low that the regulations that are in effect are thought that they will be a part of tomorrow's agenda. This is such a critical issue since the mentioned regulations are directly applicable to these sectors, such as EEE. This misinformation may be due to not following the

contemporary issues, although they claim to be following them, in the sector and the fact that their knowledge is becoming outdated.

Some participants were talking about the application about companies working with licensed disposal companies, and how these are not able to meet the demands of the market. Therefore, at some point, foreign disposal companies were being considered to be let to be active in Turkey. But this plan was put on hold because of uncertain reasons. All these facts combined, this leads a person to think that the reason behind this maybe an intended action taken to force companies to work with these companies but then being unable to meet the demand of the market, leaving them to deal with their wastes on their own and applying penal sanctions to them if they are ever detected.

- **The supply chain**

There were two extreme groups in the participants in terms of their knowledge about supply chains. One group was extremely knowledgeable while the other was totally ignorant, even resisting to learn from the other group, which was fairly interesting to witness. This makes a person think that there is an exaggerated confidence of the second group's people, keeping them to be open to new things and understanding and trying to develop the points where they are less successful or wrong.

The more aware group was even knowledgeable about the reverse flows in the supply chain. Although the ignorant group was not able to adapt themselves to this new information, it was a chance that each group was represented evenly in both focus groups.

The conscious group's definitions of supply chain was very close to the definitions that are in the literature, such as; all steps taken to take the product or service from the source to the end consumer. This group even mentioned about the importance of focusing on core competencies. But the other group thought supply chain to be a concept only talking about suppliers and the manufacturer, and as a process, only the transportation and purchasing processes.

About the issue about the whole supply chain becoming green, the fact that waste could be generated in every part of the supply chain and therefore, this whole system should be thought as a whole when managing waste and implementing environmentally friendly processes.

There was an interesting claim about how the system should be thought as a whole, thinking about how the supply chains are multinational. This participant relates this with the way Europe enforces some regulations on Turkey about basically everything. The claim contained some sub-claims such as how Europe wants to keep Turkey close to it because it sees Turkey as a business partner, and how they do not want Turkey to go through the problems they have had because of especially environmental issues.

This claim was countered with another claim from another participant about how Europe does not feel the slightest sympathy for Turkey but rather wants to take the load off themselves about the most polluting sectors and sending these sectors off to countries such as Turkey.

There was also a common agreement that if the customer demanded environmentally conscious products, there is no other chance than to integrate the



whole supply chain in order to meet this demand and that otherwise it would be impossible since the product or service is prepared and delivered to the consumers with the collective work of all the chain members. For example if the manufacturer has the ISO 14001 certification, in order for this company to manufacture its products in compliance with this quality system, the upstream channel members should also be providing such qualified material to the company.

By thinking of the level of integration in the supply chain not only the manufacturing or the purchasing activities but also helping processes such as what kind of a vehicle serves the company to deliver employees to the manufacturing facility is a criteria to tell how green a supply chain is.

Two ways by which a supply chain could become green was defined: the manufacturer to impose this on its business partners in the chain; and the business partners of the manufacturer to like the processes and principles of the manufacturer and want to become like it.

An idea was that if the supply chains were thought of as pyramids, if the disposal process is operated successfully from one floor to the other, the country will have implemented environmental policies very successfully.

In conclusion, one participant says, if the sources are managed intelligently all through supply chains, the most major outcome of this green approach would be the longevity of the world.

#### 4.5 Results

- Being environmentally friendly was most frequently associated with high costs, managing operations the right way, currying favor with Europe, using sources efficiently, and generating minimum waste.
- Being environmentally friendly being associated with generating minimum waste supports the thesis in this study that waste management could in fact be a good starting point in order to turn the whole supply chain green.
- The most important green barrier that stands in the way Turkey seems to be the “monitoring and control” issues.
- Some are aware of intangible wastes and reverse logistics
- Some participants knew about WEEE and RoHS, but they were not aware that these applied to their sectors, which shows the lack of awareness
- Costs of green implementations were highlighted in every opportunity but the stress was on the effects of these costs on developing and under-developed countries.
- Understanding and recognizing the generated waste is at utmost importance. If a company is not familiar with its waste, as the environmental impact of that waste cannot be understood, right measures will not be able to be taken in order to neutralize this impact.
- It was good to see that reverse logistics was mentioned during the discussions, but the fact that this was not known by all participants leads one to think that this could be related to education and/or the culture of the company.

- Although one of the participants was from a company that is originated in Europe, and is a company that is known for its environmentally friendliness, and worked in the global logistics department, it was interesting to hear claims such as “It is not my duty to follow up on legal requirements”. This has brought the researcher to thinking that even if some processes or implementations of a company may be green, in order for this to really count is to make this a part of the company’s culture. Not being able to judge whether the company is truly green or not, it is also necessary to note that even if the company is green, this attitude shows the company as just a so-called green company, which is damaging for the corporate image.
- A good implementation was suggested by one of the participants, answering the complaints about costs. When talking about collecting the products back from the market, after they have completed their lives, companies could transfer this responsibility to the importers (in the other country), by giving them a discount, expecting them to collect the goods back from the market in return.
- The economic green driver is so strong that the ones who had realized this opportunity before others have made the right connections and landed as market leaders. This is not a negative thing since they pose as opponents to the other companies who would like a piece of the cake and motivate them into competing for that piece.
- A participant said that being environmentally friendly should not be done in order to curry favor to the EU. This claim gets the researcher to think that the

participant who said this thinks the others are thinking this way and if the majority of the market is thinking like this, it would pose as a great problem.

- Two opposing claims were made concerning the awareness of companies: (1) there is no informing activity; (2) there is no interest. When the two opposing sides accuse each other for one issue, it is either both of their faults or there is a third party who is. But there is one thing for certain. When there is not enough monitoring and control, the business who thinks whatever they do, they do not have to explain any of their actions; do not feel the necessity of becoming knowledgeable about these issues.
- The tendency of consumers to purchase according to prices is explained by the awareness level. This idea supports the model proposed in this study that the consumers should be thought of as two major groups: aware and unaware and treated accordingly. The need for eco-labels was also mentioned in order to make the consumers aware of green issues and how the products they use/consume could affect the environment. The eco-labels were thought of a part of the education that is necessary to be given to individuals.
- The thought was that the factor defining the environmentally friendliness of a product starts with its design. So, design should be thought of as a critical element of the green supply chain.
- Stressing on the usage of packaging in high amounts, it was suggested that designing and using reusable packages will decrease packaging costs as well as the impact on the environment as less waste will be generated.
- The most important green driver seems to be the customer demand for the Turkish companies. Therefore in order for companies to be green, the

customers need to be demanding them to be green. And in order for customers to demand green products, they should be made aware.

- The term “economic value” that was mentioned proves that there is a certain awareness that wasted materials cannot be thrown away as wanted but needs to be assessed and the possible options should be evaluated.
- There was a common agreement that the supply chain members will affect each other in terms of green issues, since all members should be producing in the same manner in order for the finished product to be environmentally friendly
- A general lack of corporate culture regarding green issues. This result was drawn from the expressions such as: “I could only be happy if the company was green, but the owner of the company may give better answers”.
- There was a new driver suggested in one of the focus groups that was not in the literature: supplier motivation. This driver was explained as the more the manufacturers stimulate current or potential suppliers to work with them, the more chance that the suppliers will be willing to comply with the conditions the manufacturers put forth, for instance production according to the RoHS directive or managing waste in a certain manner.

## **CHAPTER V**

### **DISCUSSIONS AND CONCLUSION**

#### **5.1 Discussions**

The green consciousness concept can be thought of as a two-way street; concerning both the consumers and companies. Because if there is a demand for green products but there companies do not provide green products and/or services, the demand will remain unsatisfied. Vice versa, in case when companies provide green products and/or services, and the consumers do not demand these, again, there is an imbalance between the demand and supply in the market. Therefore, in order to have a balanced demand-supply relationship, the environmental consciousness must be understood by every party in the supply chain – including the end consumers – and must be managed carefully in order not to over-promise when starting to implement green processes. Because these initial implementations will serve as reference points for both the industry and the end consumers; thus will affect how they will continue to feel about the subject; strengthening or endangering the sustainability of environmental consciousness and environmentally conscious initiatives. That is why it was seen as a necessity to select an industry for this study.

After the selection of the sector, as the main aim of this study is to be able to suggest a way by which that sector could achieve having green supply chains, green supply chains and reverse logistics were examined in the literature and during the focus groups.

The main idea in the literature was that the whole supply chain needs to be green in order for any environmentally friendly initiative to reach its goal. The discussions in the focus groups also agreed with this claim. One more claim in the literature was that being green affects consumers' views about the company. But in order for the Turkish market to appreciate these companies, first of all, the consumers need to be aware of these environmental issues.

According to the literature, green initiatives should also be visible in order to receive the hard earned rewards from consumers. But in order for this visibility to mean anything, there should be green demand in the market, which can only be achieved by consumers becoming environmentally conscious.

In the literature, it was also mentioned that a green supply chain means that, that supply chain's negative effect on the environment is minimized. Although it was seen during the focus groups that this understanding can be understood by the companies, the demand still is the most important thing to trigger these activities.

One closed loop supply chain definition caught the attention of the researcher which was a definition by Wells and Seitz (2005): "In general terms, closed loops consist of two supply chains: a forward and a reverse chain whereby a recovered product re-enters the traditional forward chain", in fact creating an endless loop. This definition has led to this thought: having closed loop supply chains is the ultimate goal in the environmentally friendly implementations. This thought may be applicable for the Turkish market too but since even the reverse flows are not very well understood yet; there is a long way to reach this ultimate goal.

After the selection of the sector as EEE (electrical and electronic equipment), it was decided to assess whether waste management was an appropriate starting point in the road to turn the whole supply chain green, during the focus groups. The waste management mentioned in this study is the management of reversed materials in order to minimize the amount actually wasted and has to be gotten rid of. So in this context, waste should be understood as the materials that have not been assessed for the possible usage options yet. What the sector representatives understood from waste management was an important part of this research since this would create the basis of the discussions about the awareness level of companies. In the sector, waste was understood only as the waste generated during production, with a very few exceptions. This underlined the need to start from “waste management” while trying to restructure supply chains as green supply chains. Thus the first point to start from should be informing companies about the waste hierarchy that was examined in the literature review as: reduce/reuse/recycle/energy recovery/disposal, in this order in order to minimize the companies’ negative effects on the environment.

The literature on waste management suggested that no matter what, a general environmental awareness must be created for both companies and consumers. The studies conducted by the researcher concluded with the same result.

About raising a general awareness, the term associated with such a subject for companies is the green drivers. Thus, green drivers were researched in the literature and the results were these drivers: economic concerns, legislation, social responsibility, ethics, and stakeholder pressures. In the focus groups, two of these drivers were named: economic and customer demand as in stakeholder pressures. Surprisingly, legislation was not seen as a regular driver because of the lack of



monitoring and control. But if these two were to be done in a better and stricter way, this would also prove to be a strong driver.

Company image has also been seen as a driver but the thing that should be kept in mind is that understanding the concept of having a better image in the market because of environmentally friendliness lies within environmental awareness once more.

Being environmentally friendly also creates a new competitive advantage for the company as the things offered by the company to the consumers increase, for example the smart designing of a product may decrease its energy consumption, resulting in a decrease in the electricity bill of the consumer.

The “consumer focus” aspect of the whole subject was necessary in order to examine how the whole green supply chain activities could be tied down to the consumers. Examining this relationship brought the awareness issue into the picture once more. There is the fact that green purchasing decisions are given only by the appropriate level of environmental consciousness (H’Mida, 2009; Liu and Wu, 2009). If this is the case, if consumers tend to reward companies when they feel the company is acting socially responsibly sincerely, this proves as an opportunity that companies should consider while adopting environmentally friendliness as a corporate strategy. This in fact proves the two way street idea: if the company wants to gain competitive advantage by being environmentally friendly, and increase its competitiveness in the market, it has to appeal to the consumers; which in return will let consumers to award this company by choosing its’ products or services over others and generate the rewards the company expects.

The important point that companies need to pay attention to in this case is that, as some academics put forth, if consumers feel that companies behave socially responsible because of economic reasons, the plan is more likely to backfire (Becker-Olsen et al., 2006; Sen and Bhattacharya, 2001; Barone et al., 2000; Ellen et al., 2000). Talking about the sincerity of companies in acting for the sake of the community brings the concept of “Corporate Social Responsibility (CSR)” into the picture.

Kotler and Lee (2005) have described corporate social responsibility with this definition: “*Corporate social responsibility is a commitment to improve community well-being through discretionary business practices and contributions of corporate resources*”. CSR is a way by which the community is being looked out for as well as the company itself. Without this understanding, instead of complying with the rules and regulations of the country (or community) the company is active in, they have the option to simply shift "hazardous" activities elsewhere, where there are no strict regulations (Falck and Heblich, 2007). Therefore environmental consciousness can be made a part of a company’s culture by adopting corporate social responsibilities. Some studies insistently mention that CSR creates an atmosphere where the market rewards companies’ social deeds (e.g. Orlitzky et al., 2003; McGuire et al., 1998).

These mentioned facts highlight the importance of consumers’ perceptions on companies’ and supply chains’ environmentally friendly initiatives and applications and their success. The fact that environmentally friendly (green) initiatives should not be considered only on a company basis was mentioned in Chapter II, under the literature review of “green supply chains”. Talking about the integration of the whole supply chain around the main principles of the supply chain, such as being

environmentally friendly, understanding the current situation is necessary in order to determine the necessary steps to be taken in order to reach or get as close as possible to the desired point of having a closed-loop supply chain.

Since Turkey is the area this study is interested in, understanding how “supply chain” and “environmental consciousness” concepts are understood among companies was tried to be assessed during the focus group studies by asking the participants what these concepts meant to them and some arguable issues were pointed out in order to create a brainstorming environment.

In the supply chain models in the literature, a number of supply chains have been suggested and a few diagrams were suggested for the aim of depicting the influences environmental issues would have on the supply chain management or showing the processes that need to be managed in a green supply chain. But the researcher thought that the awareness factor was not depicted in these models. Therefore, especially after the focus groups, the researcher felt the need to propose a new model, which would divide the consumer market into two: aware consumers and unaware consumers.

The emphasis on “customer demand” being the most important driver in the Turkish market strengthened the need so the models in Figure 6 and Figure 7 were suggested.

Figure 6 – The Proposed Model I

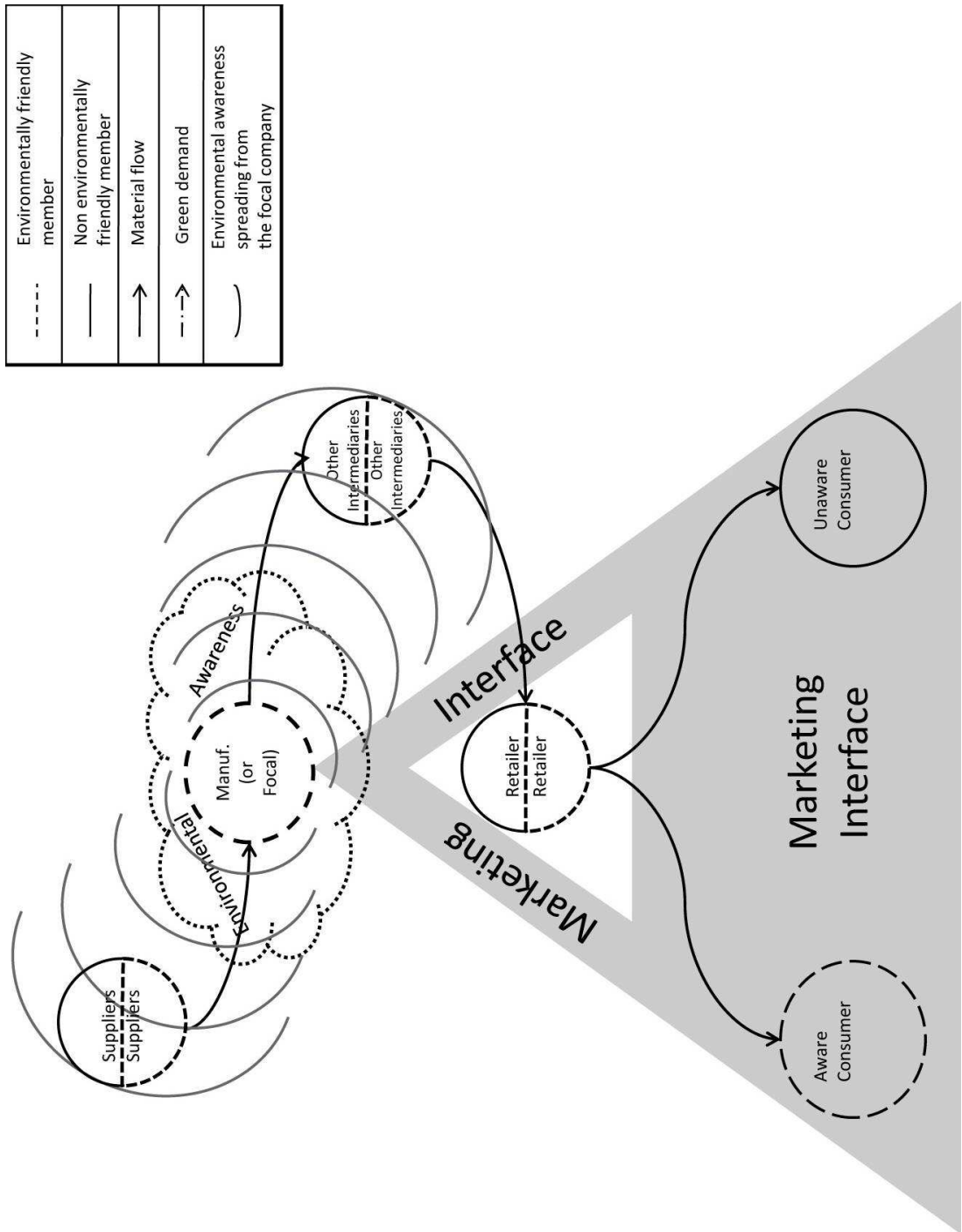
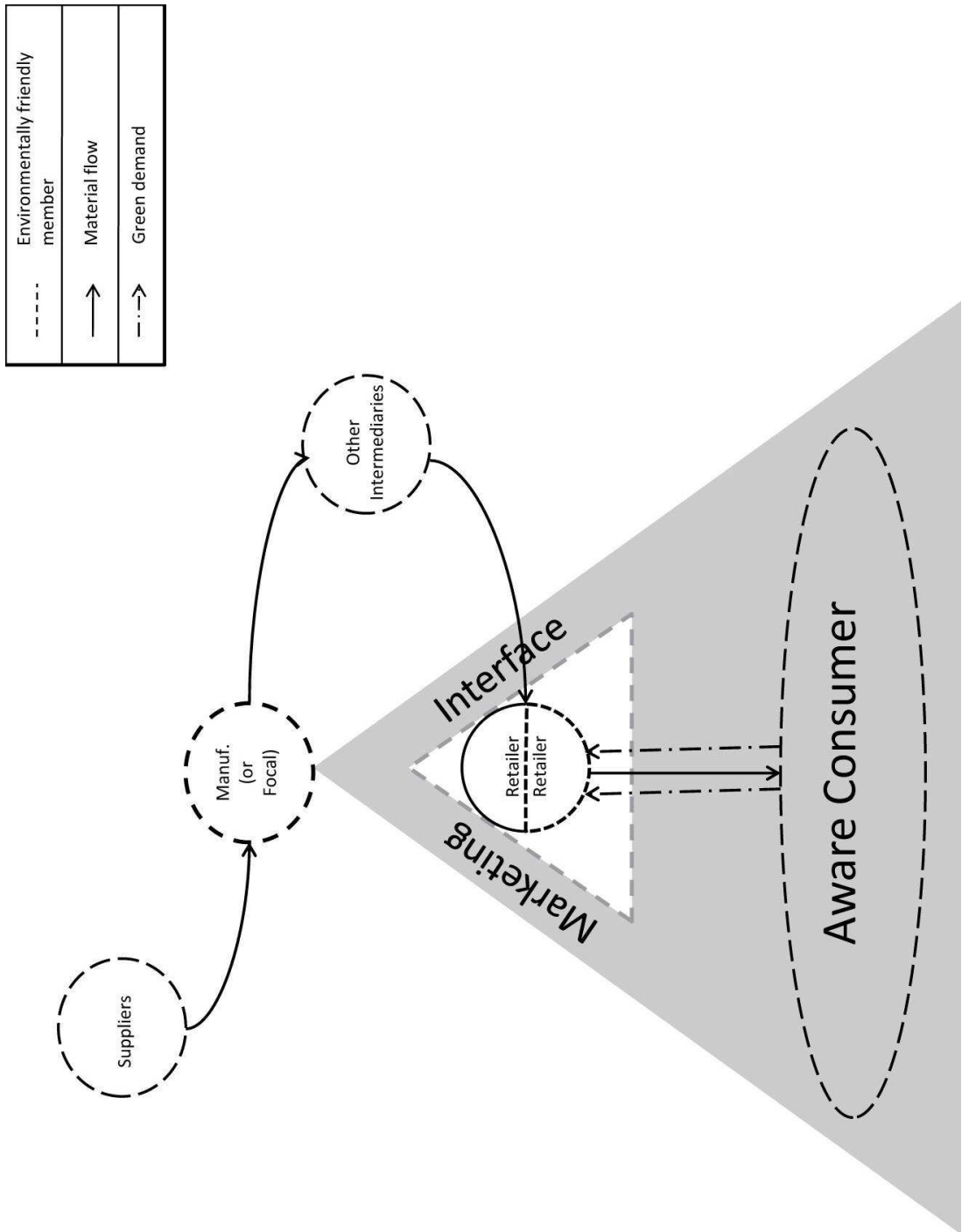


Figure 7 – The Proposed Model II



## 5.2 Model Overview

It was seen appropriate by the researcher to represent this model in two sections, the first one depicting how the green focal company affects the other parties in becoming green until the whole supply chain is green, except the retailers. The second one depicts how the consumer market turns the retailers green with their green demand. This main idea is discussed in detail in the following section.

**The main assumption:** The assumption in this model is that if the focal company – the manufacturer in this case – defines the boundaries, nature and personality of the supply chain. Therefore, if this focal company is to adopt environmentalist behavior, the whole supply chain will adapt to this, sooner or later. The speed and level of adaptation will depend on the role they assume in the chain. This relationship will be further discussed below.

**Entities in the model and the degree to which they get affected by changes adopted by the focal company:**

- Suppliers: The suppliers are probably the ones which will be affected the most by the changes the focal company will go through, since they are the upstream partners and as the focal company has the freedom to eliminate suppliers and find new ones if the supplier refuses or unable to make necessary changes and adapt to the new wants of the focal company. This freedom is endowed to the focal company because of its power and dominance in its supply chain, acting as the glue of the whole chain.
- Manufacturer (or Focal Company)

- Other Intermediaries (Is there a need to break these down?): The other intermediaries' adaptation level and speed is the trickiest part of this chain since they may be working for numerous focal companies of different supply chains at the same time. Therefore, the kind of the intermediary and its other partners will be determinants of the level of adaptation. In case the desired adaptation subject will set the intermediary apart in its own competitive environment, and increase its chances of being selected as a supply chain member in other supply chains as well, the intermediary will be likely to adapt itself. Otherwise, the only way the intermediary may adapt its operations and processes according to the needs and wants of the focal company, is to create a good benefit for them, such as a long-term contract.
  - Although retailers are a kind of intermediaries, since they are the front of the supply chain, to the consumers, it was seen appropriate to evaluate them separately.
- Retailer:
  - Brand's own retailers: This entity should not be thought of as a separate entity from the focal company as the green focal company (keeping our main assumption in mind), will have the say on the operations of these types of retailers
  - General stores: This entity will probably be the one who will be the least affected by the awareness emitting from the focal company. This is due to the fact that this kind of retailers does not have any production process, therefore are not liable to any set of rules or regulations. But this should not mean the retailer will never be

motivated to be green. On the contrary, the entity that will make retailers gladly be green is the consumers. Once the consumers are aware enough to demand green products in the majority, retailers will have no other choice but to become green. In this perspective, it is possible to say that this is the entity that will become green the last in the supply chain, taking its color from the consumers, the market, kind of like a chameleon.

- Consumers:

- Aware consumers: The entity, named as “aware consumers” in this model represent the consumers that are environmentally conscious by themselves and are willing to be loyal customers of truly green brands, and is doing everything they can about conserving the environment.
- Unaware consumers: The entity, named as “unaware consumers” in this model represents the consumers that are unaware of environmental issues or consumers that are simply ignorant. Therefore, this entity is the target of the focal company to turn to green by making them aware of these issues and make them care, with the correct use of marketing efforts and being true to their word that they are green.

**The marketing interface:** It is necessary to identify the marketing interface that is presented in the model, in order to get the correct understanding about its role. The marketing interface in the model represents the means by which the consumer market



sees and gets to recognize the company by. Therefore this interface involves all components of the marketing mix.

- Product: The products offered to the market by the company (and its supply chain) need to be designed in an environmentally friendly way, enabling it to have the minimum harm on the environment, possible.
- Price: The prices will be set like a luxury product at first, due to the newness of the ideas and technologies that are used to create that product, but as the other sectors start seeing the opportunity of competing with their rivals in terms of being environmentally friendly, this pricing strategy will change and will fall as the competition grows fiercer.
- Promotion: Promotions are the most important and the most dangerous component of the marketing mix, since these activities are the elements that influence the consumers' perceptions the most. The design of the promotions needs to be made in an honest way, making sure not to violate the corporate social responsibility principles of the company.
- Place: The place is also an important element since the experience the consumers have about the company is related to the place of purchase. The careful placement of facilities (for instance near wind turbines) and green design of these facilities allow the company to decrease their negative effects on the environment and therefore increase the overall environmentally friendliness of the supply chain.

### **5.3 Conclusion**

In conclusion, all the research questions were able to be answered, supporting the study to be concluded. During the focus groups, it was seen by the researcher that

sector selection had been done wisely, directing the study to a wanted situation. With these focus group studies, it was seen that understanding and managing waste will be a good starting point in order for the supply chain to become a green supply chain since this understanding will allow companies to reevaluate processes with a necessity point of view such as; is this process really necessary, or; could the waste types generated by the production processes need to be this much.

Evaluating the supply chain understandings of companies was another very important part of the study. Two main groups were present in the focus groups: one group being extremely knowledgeable about supply chains and the other one totally illiterate. One of the best definitions of a supply chain was made as; “All steps taken to take the product or service from the source to the end consumer.”

It was also seen that the understanding of the integration in the supply chain was existing in all participants. This was a very good sign in terms of giving hope to the researcher that once waste management is understood fully by these manufacturing companies, the chance that their supply chains will be formed around this idea is very high.

Being environmentally friendly meant using sources efficiently and trying to minimize waste generation to the companies which strengthens the above mentioned hope that the companies will do a good job once they reach the mentioned awareness about wastes and waste management.

An important finding of the study was the detection of the problem with the monitoring and control of the application of environmental rules and regulation by the government. Because of this lack of control, companies feel they are not bound

by any rules when in fact they are. This element was found to be a critical point just like the awareness. In order for the environmental awareness to turn into action, the rules need to be monitored in businesses to see whether they are implemented or not and deterrent penal sanctions should be applicable to the ones who are not in compliance with these rules.

It was good to see that the assessed advantages of being green were in consistency with the ones present in the literature. This proves that in fact some part of the necessary knowledge is present in the sector but the most critical element is the motivation to put this knowledge into practice, which is consumer demand.

Even after the green demand is created, a point that companies need to be careful about is to keep profit as a means and not as a goal, because what matters the most is the longevity of the world. If environmental issues are not tended to immediately and with the right reasons, there will not be a world any more. Even this thought should in fact be enough to motivate individuals and companies to adopt green behavior but sadly it is not. Once the supply chains become green, this process should go on in order to achieve sustainability. Only that way, the longevity of the world can be achieved.

Finally the model as seen in the tables 6 and 7 were proposed, stressing on the need to divide the members of the supply chain into two main groups as being aware and unaware members, and explaining the influence and integration relationship throughout the supply chain during the transition of a supply chain into a green supply chain.

#### **5.4 Limitations of the Study**

- Because of time and participant constraints, focus groups had to be limited to two sessions and included representatives only from the electrical and electronic equipments industry
- Although it is common practice to complement focus group studies with interviews in the literature, it was observed during the setting up of the focus groups that getting the executive participants that participated in the focus groups and face to face interviews would be nearly impossible because of time constraints of both the researcher and the participants.
- Izmir was selected to be the application's location as the researcher and the supervisor resided in this area and the time constraints limited the flexibility about travelling in order to conduct the study.
- In the informed consent forms that were used in earlier studies in the literature, there was a note that informed the participant about his/her freedom in leaving the focus group in case they felt they did not want to be present anymore; but this part was omitted because of cultural characteristics of Turkish people.

#### **5.5 Recommendations for Further Research**

If the context of this study was to be applied to other sectors as well as other regions and countries, a ground for comparison about perceptions will be created. This comparison opportunity will enable the underdeveloped and developing countries or regions (in terms of being environmentally friendly) to take example from the more developed ones. In addition to this, a cross-sectoral analysis will point out the

opportunities for inter-sectoral cooperation and develop the potential of having integrated supply chains, as it will serve as a framework on being environmentally friendly.

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## **APPENDICES**

### **Appendix-A. Informed Consent Form**

(To be read out by the researcher/moderator before the beginning of the session. One copy of the form to be left with each participant; one copy to be signed by each participant and kept by the researcher/moderator.)

My name is Esen Andıç.

I am doing research on a thesis study entitled Green Supply Chains: Efforts and Potential Applications for the Turkish Market.

My supervisor Asst. Prof. Dr. Öznur Yurt is directing the study and can be contacted at Izmir University of Economics, Department of Logistics Management should you have any questions.

Thank you for agreeing to take part in this study. Before we start, I would like to emphasize that your participation is entirely voluntary.

The focus group will be tape-recorded, but the data will be kept strictly confidential and will be available only to myself and my supervisor.

Quotations from the results may be made part of the thesis study, but under no circumstances will your name or any identifying characteristics be included in the study.

## **Appendix-B. Informed Consent Form (Turkish Version)**

### **Gönüllü Katılım Kabul Formu**

(Seanstan önce arařtırmacı tarafından katılımcılara okunmak üzere hazırlanmıřtır.

Formun bir kopyası katılımcıda, bir kopyası ise arařtırmacıda kalacaktır.)

İsmim Esen Andiç. İzmir Ekonomi Üniversitesi, Lojistik Yönetimi Bölümü'nde yüksek lisans yapmaktayım ve tez çalışmamın adı, "Yeşil Tedarik Zincirleri: Türkiye Pazarı için Çalışmalar ve Potansiyel Uygulamalar"dır.

Akademik danışmanımın ismi Yrd. Doç. Dr. Öznur Yurt'tur ve bir sorunuz olması durumunda kendisine İzmir Ekonomi Üniversitesi, Lojistik Yönetimi Bölümü'nden ulaşabilirsiniz.

Çalışmamda yer almayı kabul ettiğiniz için teşekkür eder ve katılımınızın tamamen gönüllü olduğunu hatırlatmak isterim.

Bu odak grup görüşmesi, ses kaydına alınacaktır ve görüşme sırasında toplanan veri ve bilgiler tamamen gizli tutulacaktır.

Araştırma içerisinde görüşme sonuçlarından alıntılar yapılabilir ancak bu durumda isimleriniz ve kimliğinizi belli edebilecek detaylar kesinlikle gizli tutulacaktır.

Bu formu size okuduğumu ve içeriğini size onaylattığımı kabul etmek için lütfen formu imzalayınız.

### **Appendix-C. Focus Group Questions: A General Frame**

(The focus groups will aim to get a feel of the industry's approach towards the changes related to the rules and regulations about environmentally friendliness, to understand whether businesses are ready and/or willing to integrate their processes and business ideologies to be in accordance with these new rules and regulations.)

- What is waste? Should it be managed?
- Do you think understanding “waste” is important in starting to manage processes in a more environmentally friendly and more efficient manner?
  - What advantages do you think being green can bring to you and your company?
  - How do you regard the progression of green initiatives? (In this question, they will talk about what they think of the green initiatives. If they do not talk about the value of it, the leading question will be: Do you believe green initiatives will gain value?)
- What motivates companies to adopt green policies?
- What are the barriers for companies about becoming green?
- What do you think consumers are thinking about green issues?
- Are there any companies that you know that are green in your sector?
- What do you know about the existing environmental regulations in Turkey and EU?
- What do you know about the environmental regulations that are going to be imposed, concerning your sector?
- What is a supply chain? Who are its members?
- Do you think that it is critical for your company to become greener? Why?
- Do you think that it is critical for your whole supply chain to become greener? Why?

## Appendix-D. Focus Group Questions: A General Frame (Turkish Version)

### Odak Grup Soruları

(Odak grup çalışmalarının amacı, sektörün yeşil yaklaşımlardan haberdar olup olmadığını ve çevre ile ilgili olarak gelecek olan yasalar ile ilgili ne düşündüğünü görmeye çalışmak. Bunun yanı sıra, işletmelerin bu yasalara uyabilmek için hazır ya da istekli olup olmadığını ölçmek.)

- Atık nedir? Yönetilmesi gerekli midir?
- Size göre “atık”ın anlaşılması, süreçlerin daha çevreci ve daha etkin bir şekilde yönetilmesi için önemli midir?
- Size göre yeşil olmak firmanıza ne gibi avantajlar sağlayabilir?

(RULES AND REGULATIONSa söz gelmezse: Bu konuda yasalara uyum gösterme hakkında ne düşünüyorsunuz? Sizce kurallara uymak için yatırımlar yapmak mı? Uymayıp yaptırımlarına katlanmak mı?)


- Yeşil(çevreci) girişimlerin gelişimi hakkında ne düşünüyorsunuz? (Burada hakkında ne düşündüklerinden bahsedecekler. Eğer bu konuya gelmezlerse ara soru: Yeşil girişimlerin zaman içinde değerinin artacağını düşünüyor musunuz?)
- Firmaları yeşil politikalar edinmeleri için motive eden etkenler sizce nelerdir? (LEAD: Örneğin gelir buna bir örnek olabilir mi?)
- Peki, size göre yeşil girişimlerde bulunmanın önünde bulunan engeller nedir?
- Size göre çevreci konularda tüketiciler neler düşünüyorlar? (LEAD: Tüketiciler çevreye duyarlı olarak algıladıkları firmaları tercih ederler mi sizce mesela?)
- Yeşil (çevreci) firma olduğunuzu bildiğiniz firmalar var mı? Sizin sektörünüzde?
- Türkiye ve AB’de mevcut olan çevre ile ilgili yasalar ile ilgili neler biliyorsunuz?

## Appendix-D (cont.). Focus Group Questions: A General Frame (Turkish Version)

### Odak Grup Soruları (devam)

- Özellikle kendi sektörünüz ile ilgili olarak yakın zamanda yürürlüğe girecek olan yasa ya da yönetmelik var mı? (Varsa ve evet der geçerse, mesela neler var?)
- Tedarik zinciri nedir size göre? Kimlerden oluşur?
- Size göre tedarik zincirinizin daha çevreci hale gelmesi önemli mi? Neden?

## Appendix-E. The Focus Group Invitation (in Turkish)



**Araştırmacı:** Esen Andiç (İzmir Ekonomi Üniversitesi, Lojistik Yönetimi Bölümü)  
**Konu:** Çevre ve Elektrik-Elektronik Sektörü Odak Grup Çalışması

Yüksek lisans tez çalışmam için sektör temsilcileriyle 1.5-2 saat sürecek bir odak grup çalışması yürüteceğim. Çalışmamın başarısının sizlerin desteğine bağlı olduğunu düşünüyorum. Araştırmama katılmayı kabul ederseniz aşağıdaki bilgileri doldurmanız yeterli olacaktır.

**Bilgileriniz**  
E-mail: \_\_\_\_\_  
Telefon: \_\_\_\_\_  
Çalışma için ne zamanı tercih edersiniz?  
 Haftaiçi uygun olabilecek bir gün ve zaman dilimi (lütfen belirtiniz): \_\_\_\_\_  
 Cumartesi : \_\_\_\_\_

İletişim için: [esen.andic@ieu.edu.tr](mailto:esen.andic@ieu.edu.tr)

Appendix-F. The Themes and General Concepts (Turkish Version)

Temalar ve Genel Konseptler

		Toplam Bahsedilme Sayısı	Temalara Göre Toplam Bahsedilme Sayısı
Yeşil GÜdüleyiciler	<b>Ekonomik:</b>	<b>11</b>	33
	müşteri istekleri	7	
	ekonomik sebeplerle güdülenen	3	
	pazar baskısı	1	
	tüketici baskısı	-	
	karlılık artışı	-	
	<b>Rekabetçilik:</b>	<b>10</b>	
	rekabet üstünlüğü	6	
	rakiplerin çevreci uygulamaları	3	
	pazar payında artış	1	
	<b>Hukuki ve meşru statüye sokma:</b>	<b>10</b>	
	ISO 14001 belgesi	7	
	kanunlar ile ilgili	3	
	mevzuat	-	
	düzenleyici	-	
	<b>Sosyal sorumluluk:</b>	<b>2</b>	
<b>Etik:</b>	<b>0</b>		
etik sorumluluk	-		
Atık	Yeniden kullanılabilir/geri dönüştürülebilir	<b>27</b>	27
	Katı atık	<b>0</b>	
	Endüstriyel atık	<b>0</b>	
Çevreci/ yeşil olmanın önündeki engeller	maliyet	<b>19</b>	25
	anlayış/bilgi eksikliği	<b>4</b>	
	tesis yetersizliği	<b>1</b>	
	yönetim desteği eksikliği	<b>1</b>	
	ekonomik	-	
	motivasyon eksikliği	-	



Appendix-F (cont.). The Themes and General Concepts (Turkish Version)

Temalar ve Genel Konseptler (devam)

Yeşil/ Çevreci olmanın avantajları	<b>Yasal uygunluk:</b>	<b>8</b>	17
	yasal kısıtlar çerçevesinde çalışma/faaliyet gösterme	4	
	kuralların takip edilmesi	3	
	regülasyonlara uygunluk	1	
	yasaların benimsenmesi	-	
	yasal gerekliliklerin uygulanması	-	
	kurallara bağlılık	-	
	kurallara/düzenlemelere riayet	-	
	<b>Daha iyi finansal performans:</b>	<b>3</b>	
	ekonomik faktörler	2	
	ekonomik faydalar	1	
	ekonomik kapasite	-	
	ekonomik anlamda makul olma	-	
	ekonomik güdüler	-	
	ekonomik fizibilite	-	
	ekonomik gelişme	-	
	ekonomik kazanç	-	
	ekonomik çıktılar	-	
	ekonomik ödüller	-	
	ekonomik/finansal olarak sürdürülebilir olma	-	
	<b>Daha iyi bir imaj:</b>	<b>6</b>	
	kurumsal imaj	3	
	kamusal imaj	1	
	çevreci bir imaj ortaya koyma	1	
yeşil/çevreci imaj	1		
marka imajı	-		
ün/nam	-		
<b>Toplam Bahsedilen Konsept Sayısı</b>		<b>102</b>	

## Appendix-G. Theme Translations (From English to Turkish)

EN	TR
<b>Waste</b>	Atık
<b>Solid waste</b>	Katı atık
<b>Industrial waste</b>	Sınai atık
<b>Reusable/recyclable</b>	Endüstriyel atık
<b>Advantages of being green:</b>	Yeşil olmanın avantajları:
<b>Legal conformity:</b>	Yasal uygunluk
<b>Compliance with rules/regulations</b>	Kurallara/regülasyonlara riayet
<b>Meeting regulations</b>	Regülasyonları karşılama
<b>Legal adoption</b>	Yasaların benimsenmesi
<b>Implementation of legal requirements</b>	Yasal gerekliliklerin uygulanması
<b>Following the rules</b>	Kuralların takip edilmesi
<b>Adherence to rules</b>	Kurallara uyma
<b>Operate within the legal constraints</b>	Yasal kısıtların içerisinde çalışma
<b>Better financial activity:</b>	Daha iyi finansal performans:
<b>Economic benefits</b>	Ekonomik yararlar
<b>Economic viability</b>	Ekonomik kapasite
<b>Making economic sense</b>	Ekonomik olarak mantıklı olma
<b>Economic motives</b>	Ekonomik güdüler
<b>Economic factors</b>	Ekonomik faktörler
<b>Economical feasibility</b>	Ekonomik fizibilite
<b>Economic development</b>	Ekonomik gelişim
<b>Economic gain</b>	Ekonomik kazanç
<b>Economic outcomes</b>	Ekonomik çıktılar
<b>Economic merits</b>	Ekonomik ödüller
<b>Economically/financially sustainable</b>	Ekonomik/finansal olarak sürdürülebilir olma
<b>Better image:</b>	Daha iyi bir imaj:
<b>Corporate image</b>	Kurum imajı
<b>Public image</b>	Halk imajı
<b>Promoting a green image</b>	Çevreci bir imaj sergileme
<b>Brand image</b>	Marka imajı
<b>Green/environmental image</b>	Yeşil/çevreci imaj
<b>Reputation</b>	Ün
<b>Green drivers:</b>	Yeşil güdüleyiciler
<b>Economic:</b>	Ekonomik:
<b>Economically driven</b>	Ekonomik
<b>Market pressures</b>	Pazar baskısı
<b>Customer requirements</b>	Müşteri istekleri
<b>Consumer pressure</b>	Müşteri baskısı
<b>Increased profitability</b>	Karlılık artışı

<b>EN</b>	<b>TR</b>
<b>Competitiveness:</b>	<b>Rekabetçilik</b>
<b>Competitors' environmental practices</b>	Rekabetin çevreci yaklaşımları
<b>Competitive advantage</b>	Rekabet üstünlüğü
<b>Increased market share</b>	Pazar payında artış
<b>Legitimation:</b>	Onay:
<b>Legislation</b>	Mevzuat
<b>Regulatory</b>	Düzenleyici
<b>Legislative</b>	Kanunlar ile ilgili
<b>ISO 14000 certification</b>	ISO 14001 Belgesi
<b>Social responsibility</b>	Sosyal sorumluluk
<b>Ethics</b>	Ahlak
<b>Ethical responsibility</b>	Ahlaki sorumluluk
<b>Barriers to be green</b>	Yeşil olmanın önündeki engeller
<b>Economic</b>	Ekonomik
<b>Cost</b>	Maliyet
<b>Inadequate facilities</b>	Tesis yetersizliği
<b>Lack of management support</b>	Yönetim desteği eksikliği
<b>Lack of understanding/knowledge</b>	Anlayış/bilgi eksikliği
<b>Lack of motivation</b>	Motivasyon eksikliği