Many different theories are found to explain how industrial companies implement sustainability strategies in their supply network. However, the question why companies in a similar position choose different strategies remains under discussed. It is this question the research of this study seeks to answer using the clothing industry as an example. The results of a survey performed for this study show that specific innovation characteristics of focal companies are significantly related to the strategies found for improving the social aspects but not for the environmental aspects. These innovation characteristics represent the capability to act. The differences found between the strategies for the improvement of social versus the environmental aspects were analysed using in depth case-studies. The results of this research show that the decision making processes follow different routes and that different actors and factors are involved. This insight should be used for speeding up the implementation process.
SUSTAINABILITY STRATEGIES IN INDUSTRIAL SUPPLY NETWORKS

AN INNOVATION APPROACH CONCERNING ENVIRONMENTAL AND SOCIAL ASPECTS IN THE CLOTHING INDUSTRY

Harrie van Bommel

Enschede, the Netherlands, 2016
SUSTAINABILITY STRATEGIES IN INDUSTRIAL SUPPLY NETWORKS

AN INNOVATION APPROACH CONCERNING ENVIRONMENTAL AND SOCIAL ASPECTS IN THE CLOTHING INDUSTRY

DISSERTATION

To obtain
the degree of doctor at the University of Twente,
on the authority of the rector magnificus,
prof. dr. H. Brinksma,
on account of the decision of the graduation committee,
to be publicly defended
on Friday the 22\textsuperscript{nd} of April 2016 at 14.45 hrs.

by
Henricus Wilhelmus Maria van Bommel

Born on the 18th of May 1957
in Bladel en Netersel, the Netherlands
DANKWOORD (IN DUTCH)

Onderzoek doen is voor mij altijd vanzelfsprekend gerelateerd geweest aan het verzorgen van onderwijs. Kennis overdragen aan en studenten begeleiden bij het doen van praktijkgericht onderzoek in projecten, stages en bij het afstuderen is prachtig. Maar zelf ook onderzoek doen om nieuwe kennis en inzichten te ontwikkelen is nog mooier. En toen binnen de hogeschool de mogelijkheid zich voor deed door de ontwikkeling van lectoraten en het beschikbaar komen van promotieplaatsen heb ik dan ook direct aangegeven daar graag gebruik van te willen maken.

Na jarenlange betrokkenheid vanuit de opleiding milieukunde bij het beheersen van milieuaspecten bij bedrijven op locatieniveau intrigeerde mij vooral de vraag hoe deze aandacht zich verder ontwikkelt in de toeleveringsketens van die bedrijven. Omdat in een globaliserende economie bedrijven in toenemende mate verantwoordelijk gehouden worden voor de maatschappelijke effecten in hun toeleveringsketens. Maar hoe reageren bedrijven op die druk en hoe ontwikkelen ze een strategie om invulling te geven aan die verantwoordelijkheid? De maatschappelijke verantwoordelijkheid betreft naast de milieuaspecten ook de sociale aspecten en die zijn daarom ook in het onderzoek betrokken. Het onderzoek richt zich op de kleding sector. Een sector die maatschappelijk sterk in de belangstelling staat met betrekking tot duurzaamheid en waar mede daardoor vele activiteiten plaats vinden om de milieu- en sociale aspecten te verbeteren.

Naast de wetenschappelijke conclusies en aanbevelingen die het onderzoek heeft opgeleverd heb ik ook erg veel geleerd van de organisatie en complexiteit van de kleding sector en hoe daar door vele actoren aan de verbetering van de sociale en milieuaspecten wordt gewerkt. Het is erg leerzaam gebleken om me een aantal jaren onder te dompelen in de kledingsector in relatie tot duurzaamheid en ik moet zeggen dat het er niet eenvoudiger maar eerder complexer door is geworden. Een vraag die ik vaak kreeg van mijn omgeving (omdat ze wisten dat ik hier onderzoek naar deed natuurlijk) was bij welk bedrijf men het beste verantwoorde kleding kon kopen? Er werd mij in andere woorden gevraagd om bedrijven in te delen in twee categorieën nl. verantwoord en onverantwoord. Dat blijkt niet zo eenvoudig voor een onderzoeker en mijn antwoord verzande volgens mijn toehoorders dan ook vaak in nuances. Om toch enigszins tegemoet te komen aan dit concreet vraagstuk zal ik proberen een antwoord te geven met behulp van de kleding die ik tijdens de openbare verdediging zal dragen.

Dit onderzoek en de opgedane inzichten maken mij ook heel nieuwsgierig en ik kan niet wachten om het vraagstuk van duurzaamheid verder te gaan verkennen in de ketens en netwerken van ook andere industriële sectoren. Ik zal actief betrokken blijven bij onderwijs over en toegepast onderzoek naar de verdere ontwikkeling van duurzaamheid in industriële ketens en netwerken. Een overtuiging die ik al had maar door dit onderzoek nog verder is gegroeid is dat daartoe interdisciplinair samenwerken erg belangrijk is. Het verder verduurzamen van onze industriële productiesystemen vraagt daarnaast ook om meer internationale samenwerking en meer transparantie naar de samenleving. Graag draag ik mijn steentje bij aan het verkrijgen van meer inzicht om zo deze noodzakelijke grote transitie te versnellen.
Ik wil heel graag hier mijn promotor Hans Bressers en copromotor (Saxion-lector) Theo de Bruijn die mij hebben begeleid bedanken. Zonder jullie geduld, ondersteuning en stimulerende adviezen had ik het niet gered.

Verder wil ik graag de kleding bedrijven en MODINT bedanken voor de medewerking die zij verleend hebben aan dit onderzoek. Zonder hun medewerking was dit onderzoek natuurlijk niet mogelijk geweest. Het was erg prettig om een kijkje in de keuken te krijgen en dapper dat bedrijven bereid bleken zich kwetsbaar op te stellen.

Dank ook aan al mijn collega’s en de verschillende leidinggevenden bij Saxion die door de jaren heen mij altijd hebben gesteund en interesse toonden in de voortgang. Jullie zullen nu in de contacten met mij op zoek moeten naar een andere vraag dan hoe gaat het met je promotieonderzoek.

Ook ben ik heel erg veel dank verschuldigd aan mijn lieve echtgenote Annemiek die mij zag worstelen met de balans tussen privé, onderwijs en het proefschrift. Zij is daardoor wel eens iets tekort gekomen maar ik beloof je dat we dat gaan inhalen. Ook mijn drie kinderen die hun vader op latere leeftijd soms met verbazing maar ook wel met bewondering merkte ik aan een proefschrift zagen werken wil ik bedanken. Zij zijn hun eigen weg gegaan maar de interesse voor onderzoek en maatschappelijke vraagstukken is ook bij hen duidelijk aanwezig. Dank dat jullie vandaag paranimf willen zijn bij de promotie van je vader en wat zullen Annemiek en ik genieten van ons eerste kleinkind dat over een paar maanden geboren zal worden.

Harrie van Bommel

Deventer, 22 April 2016
SUMMARY

Many activities concerning sustainability throughout industrial supply networks are found in practice today. It is recognized that the present implementation process of sustainability in industrial supply networks is a process without much coordination. It may in fact be reaching its limits in terms of its ability to deliver further sustainable improvements in social and environmental standards. Understanding the present implementation process can help to improve this process towards expected sustainable improvements in the future. Up till now, the results of research were not fully able to explain differences found regarding the implementation of sustainability in supply networks.

Because industrial supply networks are complex international networks they cannot be analysed as one entity. The actors and their relations change regularly, influenced by changing circumstances in the market, the international economy and society. For this reason, “focal” companies are identified as dominating actors in the networks. They have the position and the power to influence changes in the network including changes related to aspects of sustainability. However, even when the focal company occupies the same position in the network, each company develops different types of strategies. To understand these differences, analysis should be conducted from the perspective of the “focal” company.

Different theories and frameworks have been developed to explain how implementation strategies concerning sustainability are being developed and used by “focal” companies. In these approaches the external pressures and general internal factors such as power and size of the “focal” company are primarily seen as the dominating factors. However, the question of why “focal” companies facing similar external pressures and having similar power and size choose different strategies has rarely been discussed. For this reason, the research question for this study was:

“How can the variety in sustainability strategies found in the supply networks of individual “focal” companies be understood?“

In the first phase of the research a literature review was conducted to identify and analyse existing theories and frameworks published in academic journals. The results were analysed and an innovation approach was identified as a possible means to fill this gap. As the implementation of sustainability in industrial supply networks can be seen as a system-innovation, the innovation theories and approaches were found to be helpful in analyzing the implementation process. From this perspective the implementation strategy concerning sustainability in the supply network of the “focal” company is influenced by the capability to react to the external pressure. In addition to the power and size the innovation characteristics of the “focal” company and the cooperation characteristics in its supply network also determine this capability. In this approach, the external pressure is identified as the “innovation pressure” and the strategies and activities developed (“innovation results”) are dependent on the level of the “innovation capacity” of the focal company and its network. This insight was used to develop a new theoretical framework that was published in the Journal of Cleaner Production in 2011.

The innovation approach in this new framework was subsequently tested in two phases: firstly through a survey and secondly by in depth case studies. The clothing sector was selected because it is a well-known global industrial supply network, facing many different
sustainability aspects. A sustainability strategy of a “focal” company was defined as participation in activities for improving social and environmental issues in their supply network. The clothing industry is known for having many initiatives in place for improving sustainability aspects. This makes the sector suitable for understanding why companies choose different strategies towards their supply networks.

The survey was conducted in 2010, in cooperation with the sector organization MODINT among 91 clothing companies in the Netherlands. An online questionnaire was used and the response rate was 50%. The questionnaire contained four categories of questions. The general questions concerned turnover, the amount of employees, their business model and the country their headquarter was situated in. In the second category of questions the respondents were asked to give a score to eleven external factors regarding the level of influence over their strategy for social and separately for environmental aspects. The third category asked the respondent to score thirty statements representing six categories of innovation characteristics of an organization. This score, from 1-5 should represent the extent to which the statement described the situation in their own organization. Finally, in the fourth category, questions were asked concerning the environmental and social activities they participate in. Respondents were asked to indicate their level of knowledge, participation, or future participation for eleven selected activities.

A statistically significant correlation was found between the level of innovation capacity of the “focal” company and the participation in initiatives concerning the social aspects in the supply network. This supports the assumption in the newly developed framework that “focal” companies need the capability (innovation capacity) to apply a specific strategy concerning the social aspects in their supply network. Thus, when the innovation capacity of the “focal” company does not reach a certain level, the company will not be able to join certain activities. Within the group of innovation characteristics the “insight the organization has in recent developments and trends in the sector” has the strongest correlation. Other important characteristics include “daring to address sensitive topics”, “working together with different departments and disciplines” and “cooperation with partners in the supply network”.

The correlation of the participation in environmental initiatives and the level of “innovation capacity” was not significant. It is concluded that decisions concerning the environmental initiatives are influenced by other factors and may follow a different route than the decisions concerning the “social” initiatives. The environmental initiatives can be divided in two categories. One category focuses on the technical environmental aspects of the product and material. The other category focuses on environmental management and organization (social initiatives only focus on management and organization). The correlation of the environmental organizational and management initiatives with the innovation capacity level is slightly higher than that of the technical environmental initiatives, though statistically insignificant. The participation in technical environmental initiatives seems unrelated to the internal organizational aspects. This difference may be caused by the fact that these choices are made by the technical department and specialist and less attention is needed for strategic discussions and choices by the management of the organization.

Based on the analysis for the social and environmental activities it was concluded that focal companies do not have an integral sustainability strategy. They seem to develop different tailor-made strategies for the individual social and environmental aspects related to the activities in their supply network. The general results and the analysis of the survey held
were published as an individual chapter in an edited collection “Sustainability in Fashion and Textiles” in 2013.

Case-studies were conducted to provide greater insight into the process of how strategies concerning sustainability are being developed and to understand the differences between social and environmental matters. Based on a literature review the Contextual Interaction Theory was selected to analyze the decision making processes for sustainability aspects in their supply network. Four “focal” companies were selected from the respondents in the survey. Publicly available information from their website, general annual reports and specific reports on sustainability aspects were analysed. In addition to this information, interviews were held with key persons within the company. During the interviews this information was verified and the decision-making process concerning the participation in selected sustainability activities was reconstructed. The results were described and analysed anonymously, as requested by the companies.

In all cases the external pressure was clearly recognized and they all participated in several sustainability activities. Different departments and functions were involved in the decision making process. The conclusion that the decision making process for participating in environmental versus social and technical versus organizational initiatives follow different routes, made based on the results of the survey was confirmed by the results of the case studies. The decision making process concerning the social aspects is more complex involving other actors and factors. The capability and the courage needed to take possible risks also play an important role. For this reason, companies do not always join a multi stakeholder initiative when NGO’s participate. Others company’s state the importance of transparency for society in all aspects of their supply network. Other important factors for improving the conditions in the production factories are the amount of suppliers and the percentage they produce for the company. A concentration of suppliers enables better overview. For this reason companies have started to reduce the number of suppliers they have and have increased the percentage that these suppliers produce for them.

The results of the case-analysis support the conclusion that the decision making process for participation in environmental initiatives is different because other actors and factors are involved. The marketing and sales departments were not involved in the decision making process concerning social activities in the supply network while their role in the decision making process concerning the environmental aspects of the product was very important. Environmental aspects are more related to the technical aspects of the product like the use of organic cotton or recycled textiles then the social aspects are. Because these aspects can have a strong impact on the consumer-behaviour and the image of the brand, these departments play an important role in the decision making process. The cases studied show that for example these departments hesitate the use of recycled materials because of the negative image recycled products have in the fashion market. Another example illustrating this point is that the marketing and sales departments did not always want to accept the collection of used (old) clothes in their shops because it does not correspond to the carefully designed interior and the image of the shops.

Based on the differences found, it is hypothesised that the supply chain dynamics will take different routes depending on the subject or goal. It is therefore recommended that more research should be conducted to analyze the differences in the supply chain decision and collaboration processes per (sustainability) subject. The empirical research was conducted
in the clothing industry with only a limited number of companies analyzed through the survey and case studies. Each participant was selected because they are front runners of approximately the same size differing in type of clothes produced and their specific markets. To obtain more insight into the innovation characteristics and the decision making processes within the context of sustainability, these differences should be analysed in more detail in future research.

The process of the implementation of sustainability in industrial supply networks is currently taking place in many different sectors. The presented results of the literature review support the conclusions found in the empirical research in the clothing sector. However, more insight into the differences found between the innovation characteristics of other industrial sectors and the decision making processes within the focal companies is needed. Future research should be conducted into the differences between the industrial sectors. This research can be complicated because extensive differences in the external pressure must be taken into account. For example, these differences can be the role of government legislation, or the societal value of specific industrial products. The European Union has developed a strict policy for the end-of-life phase of consumer electronics while a policy like this does not exist for clothing. Sustainability aspects of eatable products (food-industry) are valued very different by society than products that are worn (clothes) or used (consumer-electronics).

Society’s expectations from companies concerning the improvement of the relevant sustainability aspects in their supply network is increasing. A question that is often raised is how to quicken the process of the implementation of sustainability in global industrial networks. The research conducted leads to three important insights that can be used to develop a more specific approach for stimulating this process by different stakeholders in society.

The first insight focuses on the various stakeholders involved. They use their position and power to put pressure on the companies. This external pressure also exists in the clothing sector and is caused by many stakeholders simultaneously. The consumer is often seen as the most important stakeholder for demanding improvements through the use of their buying power. Companies also see them as being important. However, many other stakeholders like shareholders-owners, suppliers, NGO’s, and governments are of significantly greater importance. Thus, activities of focal companies to improve environmental or social aspects in the supply network can, for example, be stimulated by an NGO or shareholder without being communicated to the consumer. Recognition that societal changes in the supply network do not have to follow the consumer demand is increasing but often not accepted in the marketing disciplines. NGO’s already act according to this idea and are changing their strategies accordingly. They are decreasing their activities that focus on changing consumer behavior and now focus more on companies and the other stakeholders themselves.

A second insight is that integral sustainability or corporate social responsibility strategies were not found in this research. Companies appear to develop different strategies and activities for the different themes addressed in societal debates. These activities differ in priorities and level of ambition. Despite the fact that, in the public debate, the development of Corporate Social Responsibility (CSR) policies and strategies in business suggests an integral approach, this was not supported by the results of the empirical research. The societal demand for integral strategies is understandable as it allows a natural division of
'responsible' and 'irresponsible' companies. However, reality is much more complex. Because integral strategies are not found, society will have to accept that companies can only be held responsible for their policies and activities per CSR theme. This can result in companies behaving responsibly for a specific societal theme and less responsibly or irresponsibly for another.

The third insight concerns the capability of the company to act. External pressure is required to make companies aware of the need to act but it is not in itself a guarantee that companies will develop a pro-active strategy concerning the improvement of sustainability aspects in their supply network. The results of this research shows that companies will need a certain level of capability to react in a pro-active way. Consequently, external pressure is required for change but before a proactive approach from companies can be expected, the organisation should become more open for societal debates, willing to learn and cooperate with stakeholders and supply network partners and transparent concerning their activities. Rather than applying public pressure on companies, stakeholders should stimulate them to join improvement programmes, and help them become more cooperative and transparent. Also, because the future business leaders are educated in business schools at institutes for higher education all over the world they have a role to play. To make this change within the companies possible the business schools should integrate these important aspects into their curricula and train their students to be open to society, cooperative and willing to learn together with their stakeholders and all their partners in the supply network.
SAMENVATTING (IN DUTCH)

Veel activiteiten met betrekking tot duurzaamheid in industriële toeleveringsnetwerken vinden in de huidige praktijk plaats. De huidige wijze van implementatie van duurzaamheid in deze industriële netwerken vindt plaats zonder noemenswaardige coördinatie. En het kan dan ook de grens bereiken in termen van de mogelijkheid om echte integrale verbeteringen op de lange termijn te realiseren voor de sociale en milieuaspecten. Het huidige implementatie proces begrijpen kan helpen om het te verbeteren in de richting van sterke toekomstbestendige strategieën. Tot nu toe bleken resultaten van onderzoek niet volledig in staat om de verschillen te verklaren met betrekking tot de implementatieprocessen van duurzaamheid in de toeleveringsnetwerken.

Omdat industriële toeleveringsnetwerken complexe internationale netwerken zijn kunnen ze niet worden geanalyseerd als zijnde één entiteit. De actoren en hun relaties veranderen regelmatig onder invloed van veranderende omstandigheden in de markt, de internationale economie en de maatschappij. De “centrale” bedrijven (“focal” companies) worden geïdentificeerd als de dominante actoren in de netwerken. Zij hebben de positie en de macht om veranderingen in de netwerken te beïnvloeden inclusief de gewenste veranderingen inzake duurzaamheid. Maar zelfs als deze “centrale” bedrijven dezelfde of een vergelijkbare positie in nemen in het netwerk worden in de praktijk verschillende strategieën waargenomen. Om deze verschillen te begrijpen kunnen analyses het beste plaats vinden vanuit het perspectief van dit “centrale” bedrijf in het netwerk.

Verschillende theorieën en modellen zijn ontwikkeld om te verklaren hoe de implementatie strategieën voor duurzaamheid in de praktijk tot stand komen en worden gebruikt door de “centrale” bedrijven in de netwerken. In deze benaderingen worden de externe druk en algemene interne factoren als macht en grootte van het “centrale” bedrijf vooral gezien als de dominante factoren. Maar de vraag waarom “centrale” bedrijven die geconfronteerd worden met dezelfde externe druk en van vergelijkbare grootte toch een andere strategie gebruiken wordt vrijwel niet bediscussieerd.

Daarom is de volgende onderzoeksvraag geformuleerd:

“Hoe kan de verscheidenheid in duurzaamheidsstrategieën aangetroffen binnen de toeleveringsnetwerken van individuele “centrale” bedrijven worden verklaard?”

In de eerste fase van de studie is een literatuuronderzoek uitgevoerd om bestaande theorieën en modellen gepubliceerd in internationale academische tijdschriften te vinden en te analyseren. Op basis van de resultaten van de analyses werd een innovatie benadering geïdentificeerd als een mogelijke aanvulling op de gevonden theorieën en modellen. Omdat de implementatie van duurzaamheid in industriële toeleveringsnetwerken gezien kan worden als een systeeminnovatie bleken de innovatie theorieën en benaderingen erg behulpzaam bij het analyseren van het implementatie proces. Vanuit dit perspectief wordt de implementatie strategie inzake duurzaamheid in het toeleveringsnetwerk van het “centrale” bedrijf beïnvloed door de aanwezige capaciteit om te kunnen reageren op deze externe druk. In aanvulling op de macht en de grootte van het bedrijf bepalen dan ook de innovatie kenmerken van het “centrale” bedrijf en de samenwerkingskenmerken in het toeleveringsnetwerk deze capaciteit om te kunnen reageren. Bij deze benadering wordt de externe druk geïdentificeerd als zijnde de “innovatie-druk” en de ontwikkelde strategieën en activiteiten (“innovatie-resultaten”) zijn afhankelijk van het niveau van de “innovatie-
capaciteit" van het "centrale" bedrijf en zijn netwerk. Dit inzicht is gebruikt om een new theoretisch model te ontwikkelen dat in 2011 in de vorm van een artikel is gepubliceerd in het internationale tijdschrift "Journal of Cleaner Production".

De innovatie benadering in dit nieuwe model is daarna getest in twee vervolgfases. In de tweede fase met behulp van een survey en in een volgende (derde) fase met behulp van verdiepende casestudies. De kleding sector werd geselecteerd omdat het een bekend, wereldwijd, industrieel toeleveringsnetwerk is en geconfronteerd wordt met veel duurzaamheidsaspecten. Een duurzaamheidsstrategie van een centraal bedrijf werd gedefinieerd als de deelname in activiteiten voor het verbeteren van sociale en milieu aspecten in het toeleveringsnetwerk. In de kleding industrie zijn en worden veel initiatieven genomen om duurzaamheidsaspecten te verbeteren. Dit maakt de sector ook geschikt om onderzoek te doen naar de vraag hoe bedrijven een strategie kiezen in hun toeleveringsnetwerk.

De survey is in 2010 uitgevoerd, in samenwerking met de sector organisatie MODINT, onder 91 kleding bedrijven in Nederland. Een online vragenlijst is gebruikt en de respons was 50%. De vragenlijst bevatte vier delen. De algemene vragen betroffen de omzet, het aantal medewerkers, het bedrijfsmodel en het land waarin het hoofdkantoor van het bedrijf was gevestigd. In het tweede deel van de vragenlijst werd de respondent gevraagd een score te geven aan het niveau waarop een externe factor de strategie voor milieu en sociale aspecten in hun toeleveringsketen beïnvloedt. In de vragenlijst werden elf externe factoren gebruikt en werd gevraagd een aparte score te geven voor de invloed op de sociale aspecten en de milieueaspecten. In het derde deel werden de respondent gevraagd een score te geven aan dertig stellingen die (in zes categorieën) de innovatiekenmerken van een organisatie vertegenwoordigen. Deze score gaf aan in welke mate de stelling de situatie in het bedrijf beschrijft. En als laatste werden in het vierde deel aan de respondent vragen gesteld over deelname aan activiteiten voor de verbetering van milieu- en sociale aspecten in hun netwerk. Voor elf geselecteerde activiteiten werd gevraagd naar de bekendheid met, deelname aan of mogelijke deelname in de toekomst door het bedrijf.

Een statistisch significante correlatie werd gevonden tussen het niveau van de innovatie-capaciteit van het "centrale" bedrijf en de deelname aan activiteiten met betrekking tot de sociale aspecten in het toeleveringsnetwerk. Deze conclusie ondersteunt de veronderstelling in het nieuw ontwikkelde model dat het "centrale" bedrijf wel de benodigde innovatie-capaciteit moet hebben om tot een strategie voor het verbeteren van sociale aspecten in het toeleveringsnetwerk te kunnen komen. Dus als een centraal bedrijf niet het benodigde niveau van de innovatiecapaciteit heeft zal het bedrijf ook feitelijk niet in staat (bekwaam) zijn deel te nemen aan bepaalde activiteiten. Binnen de groep van innovatiekenmerken bleek vooral de mate waarin het bedrijf "inzicht had in recente ontwikkelingen en trends in de sector" de sterkste correlatie te hebben. Andere belangrijke kenmerken bleken te zijn "het bespreekbaar durven maken van gevoelige thema's", "ervaring met samenwerking tussen verschillende afdelingen en disciplines" en "ervaring van samenwerking met partners in het toeleveringsnetwerk".

De correlatie tussen de deelname aan activiteiten om de milieueaspecten te verbeteren en het niveau van de innovatie-capaciteit bleek niet statistisch significant. Geconcludeerd is dat beslissingen inzake de milieu initiatieven beïnvloed worden door andere factoren en dat het besluitvormingsproces mogelijk anders verloopt dan bij de initiatieven voor de sociale
aspecten. De milieu initiatieven kunnen in twee categorieën worden ingedeeld. De ene categorie betreft de technische milieusaspecten van het product en de grondstoffen. De andere categorie richt zich op de milieumannagement en organisatie gerelateerde initiatieven. Initiatieven voor verbetering van de sociale aspecten bevinden zich uitsluitend in deze laatste management en organisatie categorie. De correlatie van de management en organisatie gerelateerde initiatieven met de innovatie capaciteit is wel iets sterker dan die van de technische milieu initiatieven maar ook niet statistisch significant. Deelname aan technische milieu initiatieven blijkt dus geen relatie te hebben met interne organisatorische kenmerken. Dit verschil wordt mogelijk verklaard doordat de keuzes voor deelname aan technische milieu initiatieven gemaakt worden bij de technische afdeling en specialist en dat veel minder aandacht is voor een strategische discussies en keuzes door het management van de organisatie.

Op basis van de analyses voor de sociale en milieu activiteiten is geconcludeerd dat de “centrale” bedrijven in het onderzoek geen integrale duurzaamheidstrategie hebben. Ze blijken op maat gemaakte strategieën te ontwikkelen voor de verschillende sociale en milieusaspecten die gerelateerd zijn aan de activiteiten in hun toeleveringsketen. De algemene resultaten en de analyses van de survey zijn in 2013 als apart hoofdstuk gepubliceerd in het samengestelde boek “Sustainability in Fashion and Textiles”.

In de derde fase van het onderzoek zijn verdiepende case studies uitgevoerd. Doel was om meer inzicht te verkrijgen in het besluitvormingsproces over de totstandkoming van strategieën voor het werken aan duurzaamheid en de verschillen daarbij te begrijpen tussen de milieu en sociale thema’s. Op basis van literatuuronderzoek is de contextuele interactie theorie geselecteerd om de besluitvormingsprocessen voor duurzaamheid in de toeleveringsnetwerken te analyseren. Vier “centrale” bedrijven zijn geselecteerd uit de groep van respondenten die deelnamen aan de survey. Openbaar beschikbare informatie van hun websites, jaarverslagen en rapportages gemaakt voor initiatieven waar ze aan deelnemen werd geanalyseerd. In aanvulling daarop zijn interviews afgenomen met sleutelfiguren in het bedrijf. Tijdens de interviews werd de verkregen informatie gecontroleerd en werd het besluitvormingsproces voor deelname aan een aantal geselecteerde sociale en milieu activiteiten gereconstrueerd. De resultaten zijn anoniem beschreven en geanalyseerd op verzoek van de bedrijven.

Daarom zijn veel bedrijven begonnen met het terugbrengen van het aantal leveranciers en het opvoeren van het percentage dat zij voor hen produceren.

De resultaten van de case studies ondersteunen de conclusie dat het besluitvormingsproces voor deelname aan milieu initiatieven anders is omdat andere actoren en factoren betrokken zijn. Zo bleken de marketing en verkoop afdelingen niet betrokken bij het besluitvormingsproces inzake de sociale activiteiten terwijl hun rol bij de besluitvorming over milieu activiteiten erg belangrijk was. Milieueaspecten zijn meer gerelateerd aan de technische aspecten van het product zoals het gebruik van biologisch katoen of gerecycled materiaal. Omdat deze aspecten een groot effect kunnen hebben op het gedrag van de consumenten en het imago van het merk spelen deze afdelingen in de besluitvorming een grote rol. De case studies laten bijvoorbeeld zien dat deze afdelingen aarzelen om gerecycled materiaal te gebruiken vanwege het slechte imago dat producten gemaakt van gerecycled materiaal hebben in de markt van de mode en kleding. Een ander voorbeeld dat de rol van deze afdelingen bij de besluitvorming inzake milieu activiteiten illustreert betreft het inzamelen van gebruikte (oude) kleding in de winkels. In niet alle cases gaven deze afdelingen daarvoor toestemming met als argument dat het inzamelen en opslaan van gebruikt kleding niet overeenstemt met het zorgvuldig ontworpen interieur en het imago van de winkels.

Op basis van de gevonden verschillen is de hypothese geformuleerd dat de dynamiek in toeleveringsnetwerken zich op verschillende manieren zal voordoen afhankelijk van het onderwerp en het doel van de verandering. Daarom wordt aanbevolen om meer onderzoek te verrichten en daarbij de verschillen te analyseren in de besluitvormings- en samenwerkingsprocessen in industriële netwerken tussen de duurzaamheidsthema’s. Het empirische onderzoek is uitgevoerd in de kleding industrie en een beperkt aantal bedrijven heeft deelgenomen aan de survey en de case studies. De deelnemende bedrijven zijn geselecteerd omdat ze allen voorlopers zijn met betrekking tot duurzaamheid, ongeveer dezelfde grootte hebben en verschillen in type kleding en de bijbehorende markten. Om meer inzicht te verkrijgen in de innovatie kenmerken en de besluitvormingsprocessen in de context van duurzaamheid zouden deze verschillen in toekomstig onderzoek meer in detail moeten worden bestudeerd.

De implementatie van duurzaamheid in industriële toeleveringsnetwerken vindt op dit moment plaats in vele verschillende sectoren. De gepresenteerde resultaten van het literatuuronderzoek ondersteunen de conclusies gevonden tijdens het empirische onderzoek in de kledingsector. Meer inzicht in de verschillen tussen de relatie van de innovatiekenmerken en het besluitvormingsproces bij “centrale” bedrijven in andere industriële sectoren is nodig. Toekomstig onderzoek zou zich moeten richten op de verschillen tussen de industriële sectoren. Dit onderzoek kan complex zijn omdat rekening gehouden moet worden met grote verschillen in de externe druk. Deze verschillen kunnen bijvoorbeeld zijn de rol van de wetgeving door de overheid of de maatschappelijke waarde van specifieke industriële producten. Zo heeft de Europese Unie een streng beleid geformeerd voor de afvalfase van consumentenelektronica terwijl zo’n beleid voor kleding niet bestaat. En duurzaamheidsaspecten van eetbare producten (voedselindustrie) worden heel anders beoordeeld door de maatschappij dan producten die gedragen (kleding) of gebruikt (consumentenelektronica) worden.
De verwachtingen van de maatschappij naar bedrijven met betrekking tot te realiseren verbeteringen van relevante duurzaamheidsaspecten in hun toeleveringsnetwerk nemen toe. Een vraag die dan ook vaak gesteld wordt is hoe het proces van het implementeren van duurzaamheid in de wereldwijde industriële netwerken versneld zou kunnen worden. Het uitgevoerde onderzoek leidt naar drie belangrijke inzichten die gebruikt kunnen worden om een meer specifieke benadering te ontwikkelen voor het stimuleren van dit implementatieproces door verschillende stakeholders in de maatschappij.


Een tweede inzicht is dat integrale strategieën voor duurzaam of maatschappelijk verantwoord ondernemen niet werden aangetroffen bij de bedrijven in dit onderzoek. Bedrijven blijken verschillende strategieën en activiteiten te ontwikkelen voor de diverse thema’s in het maatschappelijke debat. Deze activiteiten kunnen verschillen in prioritering en ambitie niveaus. Ondanks het feit dat in het publieke debat de ontwikkeling van maatschappelijk verantwoord ondernemen in bedrijven een integrale benadering suggereert werd dit niet ondersteund door de resultaten van het empirische onderzoek. De maatschappelijke vraag naar integrale strategieën is wel begrijpelijk omdat het een indeling van bedrijven in “verantwoordelijke” en “niet-verantwoordelijke” bedrijven mogelijk zou maken. Maar de werkelijkheid blijkt veel complexer te zijn. Omdat integrale strategieën niet worden aangetroffen zal de maatschappij moeten leren te accepteren dat bedrijven alleen verantwoordelijk kunnen worden gehouden voor hun beleid en activiteiten per maatschappelijk thema. Dit kan resulteren in bedrijven die zich heel verantwoordelijk gedragen op een specifiek maatschappelijk thema en veel minder verantwoordelijk of zelfs “on”-verantwoordelijk bij een ander maatschappelijk thema.

Het derde inzicht betreft het vermogen of de bekwaamheid van een bedrijf om de gevraagde activiteiten te ondernemen. Externe druk is nodig om bedrijven bewust te maken van de noodzaak maar is niet vanzelfsprekend een garantie dat bedrijven een proactieve strategie zullen ontwikkelen met betrekking tot het verbeteren van duurzaamheidsaspecten in hun toeleveringsnetwerk. De resultaten van dit onderzoek tonen aan dat bedrijven een zeker niveau van bekwaamheid nodig hebben om te kunnen reageren met een proactieve benadering. Bijgevolg moet het bedrijf voordat proactief kan worden gereageerd op de externe druk een aantal bekwaamheden hebben of deze ontwikkelen. Het betreft hier
eigenschappen die nodig zijn om meer open te staan voor het maatschappelijke debat, de wil om te leren en samen te werken met de verschillende stakeholders en partners in het toeleveringsnetwerk. Maar ook transparant durven te zijn over je activiteiten en de resultaten daarvan. Beter dan alleen de maatschappelijke druk naar bedrijven verder op te voeren zouden stakeholders bedrijven kunnen stimuleren om deel te gaan nemen aan verbeterprogramma’s en ze helpen om meer coöperatief en transparant te worden. Ook de instellingen voor Hoger Onderwijs over de gehele wereld zouden een rol kunnen spelen omdat de toekomstige managers in bedrijven daar worden opgeleid. Om deze verandering in bedrijven mogelijk te maken zouden de opleidingen deze belangrijke aspecten moeten integreren in hun curricula en de studenten leren om open te zijn naar de samenleving, meer coöperatief en bereid om te leren samen met de stakeholders en al hun partners in het toeleveringsnetwerk.
# TABLE OF CONTENTS

Dankwoord (in Dutch) ........................................................................................................................................... I

Summary ......................................................................................................................................................... III

Samenvatting (in Dutch) .............................................................................................................................. IX

List of figures and tables ............................................................................................................................ XIX

List of abbreviations ..................................................................................................................................... XXIII

Chapter 1. The implementation of sustainability in supply networks—the pressure why versus the capability if and how ......................................................................................................................

1.1. Sustainability from production-site to supply network level .............................................................. 1

1.2. Managing sustainability in supply chains and networks ................................................................. 2

1.3. The research objective and the research questions ........................................................................ 4

1.4. Readers guide ....................................................................................................................................... 5

Chapter 2. Innovation characteristics and the decision making process within the focal company: explaining the development of sustainability strategies in the supply network ........

2.1. Introduction ........................................................................................................................................... 7

2.2. Supply chain and industrial network management ......................................................................... 8

2.3. Supply network dynamics ................................................................................................................ 9

2.4. The implementation of sustainability in supply networks .............................................................. 11

  2.4.1. Sustainable development and corporate social responsibility .................................................. 12

  2.4.2. Analyzing the implementation of sustainability in supply networks .................................... 14

  2.4.3. Frameworks for analyzing the implementation of sustainability in supply networks .......... 16

2.5. The implementation of sustainability in supply networks from an innovation perspective 18

  2.5.1. Introduction ................................................................................................................................. 18

  2.5.2. Innovation approaches for understanding supply network dynamics .................................. 18

  2.5.3. A new framework concerning the implementation of sustainability in supply networks .... 20

  2.5.4. Innovation characteristics of a focal company and its supply network related to the sustainability strategies and activities found ................................................................. 24

2.6. The decision making process for developing a sustainability strategy ........................................... 25

  2.6.1. Introduction ............................................................................................................................... 25

  2.6.2. Approaches to understand decision making processes ......................................................... 25

  2.6.3. Decision support models for understanding sustainability strategies .................................. 28

Chapter 3. Research Strategy ......................................................................................................................... 31

3.1. Introduction .......................................................................................................................................... 31

3.2. The selection of the clothing sector ................................................................................................. 31

3.3. The quantitative survey .................................................................................................................... 32

  3.3.1. Introduction ............................................................................................................................... 32
5.4.1. External influencing factors ................................................................. 64
5.4.2. External factors influencing the participation in sustainability activities ........................................ 66
5.4.3. Conclusions .................................................................................... 72

5.5. Innovation characteristics and participation in sustainability activities .......... 73
5.5.1. Introduction .................................................................................. 73
5.5.2. Innovation characteristics ............................................................ 73
5.5.3. Sustainability activities and the innovation characteristics ............... 75
5.5.4. The social activities and the innovation characteristics ..................... 77
5.5.5. The environmental activities and the innovation characteristics ......... 81
5.5.6. Conclusions .................................................................................. 86

5.6. Influence of different factors on the participation in sustainability activities .......... 87
5.6.1. Introduction .................................................................................. 87
5.6.2. Characteristics of the company, the external influencing factors and participation in sustainability activities ................................................................................................................. 88
5.6.3. The innovation characteristics and the external influencing factors .... 88
5.6.4. Conclusions .................................................................................. 90

Chapter 6. Understanding clothing companies' decision making process concerning a strategy for sustainability in their supply network .................................................. 92

6.1. Introduction ..................................................................................... 92
6.2. General characteristics of the cases .................................................. 93

6.3. The decision making process for developing sustainability strategies in Case A .......... 96
6.3.1. Introduction .................................................................................. 96
6.3.2. CSR organization and strategy .................................................... 96
6.3.3. Environmental strategies and activities in the supply network .......... 96
6.3.4. Social strategies and activities in the supply network ..................... 98
6.3.5. The decision making process concerning social and environmental activities ....................................................... 99
6.3.6. The contextual interaction theory and the decision making process .... 101
6.3.7. Innovation characteristics of the company and its relation to the decision making process ..................... 103
6.3.8. Conclusions .................................................................................. 105

6.4. The decision making process for developing sustainability strategies in Case B .......... 106
6.4.1. Introduction .................................................................................. 106
6.4.2. CSR organization and strategy .................................................... 106
6.4.3. Environmental strategies and activities in the supply network .......... 106
6.4.4. Social strategies and activities in the supply network ..................... 108
6.4.5. The decision making process concerning the environmental and social activities ........ 109
6.4.6. The contextual interaction theory and the decision making process .... 111
6.4.7. Innovation characteristics of the company and its relation to the decision making process ..................... 112
6.4.8. Conclusions .................................................................................. 114

6.5. The decision making process for developing sustainability strategies in Case C .......... 115
6.5.1. Introduction .................................................................................. 115
6.5.2. CSR organization and strategy .................................................... 115
6.5.3. Environmental strategies and activities in the supply network .......... 115
6.5.4. Social strategies and activities in the supply network ..................... 116
6.5.5. The decision making process concerning environmental and social activities ..................... 117
6.5.6. The contextual interaction theory and the decision making process .......... 117

XVII
6.5.7. Innovation characteristics of the company and the relation with the decision making process ..... 119
6.5.8. Conclusions................................................................................................................................ 119

6.6. The decision making process for developing sustainability strategies in Case D ............... 120
6.6.1. Introduction................................................................................................................................. 120
6.6.2. CSR organization and strategy ................................................................................................. 121
6.6.3. Environmental strategies and activities in the supply network ............................................. 121
6.6.4. Social strategies and activities in the supply network................................................................. 122
6.6.5. The decision making process concerning environmental and social activities ................ 123
6.6.6. The contextual interaction theory and the decision making process ..................................... 124
6.6.7. Innovation characteristics of the company and its relation to the decision making process 125
6.6.8. Conclusions................................................................................................................................. 126

6.7. Cross-case analysis .................................................................................................................. 127
6.7.1. Introduction................................................................................................................................. 127
6.7.2. Actors in the decision making process ......................................................................................... 128
6.7.3. The contextual interaction theory and the decision making process concerning the social and environmental activities ............................................................... 129
6.7.4. The innovation characteristics and the decision making process concerning the social and environmental activities .......................................................... 131
6.7.5. Conclusions................................................................................................................................. 133

7. Discussion...................................................................................................................................... 135
7.1. Introduction................................................................................................................................. 135
7.2. The summarized answer to the research question ................................................................. 135
7.3. New insights concerning the implementation process of sustainability in supply networks ........................................................................................................................................ 137
7.4. Recommendations for further research .................................................................................. 140
7.5. Societal value of the results....................................................................................................... 141

References ........................................................................................................................................ 143
Appendix I: Statements used for measuring the innovation characteristics ................................. 159
Appendix II: The eleven influencing factors for participation in sustainability activities .......... 161
Appendix III: Eleven selected sustainability activities in the clothing sector ................................ 162
Appendix IV: The questionnaire ....................................................................................................... 163
Appendix V: Case study protocol for analysing decision making processes concerning sustainability strategies ........................................................................................................ 165
Appendix VI: Sustainability strategies as formulated by the respondents ................................ 167
ABOUT THE AUTHOR.................................................................................................................. 169
LIST OF FIGURES AND TABLES

List of figures

Figure 1 - The implementation of sustainability in supply networks from an innovation perspective

Figure 2 - Model of interaction process used in Contextual Interaction Theory

Figure 3 - Dynamic interaction between the key actor characteristics that drive social interaction processes and in turn are reshaped by the process

Figure 4 - The production chain of the clothing industry

Figure 5 - Relation of the production chain phases and the business models for the clothing sector

Figure 6 - The relation between characteristics of the focal company, the external influencing factors and the participation in social and environmental activities in the supply network

Figure 7 - Scores of the six categories of the innovation characteristics of the respondent in Case A

Figure 8 - Scores of the six categories of the innovation characteristics given by the employee of the CSR department in Case B

Figure 9 - Scores of the six categories of the innovation characteristics given by the CSR manager in Case B

Figure 10 - Scores of the six categories of the innovation characteristics of the respondent in Case C

Figure 11 - Scores of the six categories of the innovation characteristics of the respondent in Case D
List of Tables

Table 1 - Turnover in 2008 of the respondents
Table 2 - Number of employees of the respondents
Table 3 - Business models of the respondents
Table 4 - Countries where the headquarters of the respondents are situated
Table 5 - Examples of sustainability strategies formulated by respondents
Table 6 - Number of respondents versus aggregated scores of acquaintance with and participation in environmental, social and sustainability activities
Table 7 - The correlation between the turnover and the total participation in social and environmental activities
Table 8 - The correlation between the number of employees and the total participation in social and environmental activities
Table 9 - Business models and the participation in environmental activities
Table 10 - Business models and the participation in social activities
Table 11 - The medium scores for the “column-”, “head-tail-“ and “brand-“companies concerning the participation in social and environmental activities
Table 12 - The influence given to eleven external factors on the attention paid to social and environmental aspects in the supply network of the organization
Table 13 - Ranks of correlations between the influence given to the eleven external factors and the participation in environmental activities
Table 14 - Ranks of correlations between the influence given to some external factors and the participation in GOTS
Table 15 - Ranks of correlations between the influence given to some external factors and the participation in EKO
Table 16 - Ranks of correlations between the influence given to external factors and the participation in EU-Eco label
Table 17 - Ranks of correlations between the influence given to external factors and the participation in ISO14001
Table 18 - Ranks of correlations between the influence given to external factors and the participation in recycling projects
Table 19 - Ranks of correlations between the influence given to the external influencing factors and the participation in social activities

Table 20 - Ranks of correlations between the influence given to the external influencing factors and the participation in BSCI

Table 21 - Ranks of correlations between the influence given to external factors and the participation in Fair Wear Foundation (FWF)

Table 22 - Ranks of correlations between the influence given to external factors and the participation in SA8000

Table 23 - Thirty statements representing the six categories of innovation characteristics used in the survey

Table 24 - Number of the respondents and the scores given to the six categories of the innovation characteristics and the total innovation capacity score

Table 25 - Ranks of correlations between the scores given to innovation characteristics and the participation in sustainability activities

Table 26 - Ranks of correlations between the scores given to innovation characteristics and the participation in social activities

Table 27 - Ranks of correlations between the scores given to innovation characteristics and the participation in the Business Social Compliance Initiative (BSCI)

Table 28 - Ranks of correlations between the scores given to innovation characteristics and the participation in the Fair Wear Foundation (FWF)

Table 29 - Ranks of correlations between the scores given to the innovation characteristics and the participation in the SA8000 (Social Accountability)

Table 30 - Ranks of correlations between the scores given to the innovation characteristics and the participation in environmental activities

Table 31 - Ranks of correlations between the scores given to the innovation characteristics and the participation in ISO14001

Table 32 - Ranks of correlations between the scores given to the innovation characteristics and the participation in Recycling projects

Table 33 - Ranks of correlations between the scores given to the innovation characteristics and the participation in the GOTS programme

Table 34 - Ranks of correlations between the scores given to the innovation characteristics and the participation in EU-Eco label
Table 35  - Ranks of correlations between the scores given to the innovation characteristics and the participation in EKO certification

Table 36  - Ranks of correlations between the influence given to external factors concerning social activities and the total innovation capacity score

Table 37  - Ranks of correlations between the influence given to external factors concerning environmental activities and the total innovation capacity score

Table 38  - General characteristics of the four selected cases

Table 39  - Factors influencing the decision making process concerning participation in social and environmental activities in the supply network of case A

Table 40  - Factors influencing the decision making process concerning participation in social and environmental activities in the supply network of case B

Table 41  - Factors influencing the decision making process concerning participation in social and environmental activities in the supply network of case C

Table 42  - Factors influencing the decision making process concerning participation in social and environmental activities in the supply network of case D

Table 43  - Actors and the level of influence in the decision making process for social and environmental activities in cases A, B, C and D

Table 44  - Factors of the Contextual Interaction Theory influencing the decision making process for social and environmental activities in cases A, B, C and D

Table 45  - Scores given to the categories of innovation characteristics during the interviews for the cases A, B, C and D
### LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCI</td>
<td>Better Cotton Initiative</td>
</tr>
<tr>
<td>Blue sign</td>
<td>Standard for reducing Safety, Health and Environmental impacts of substances in textile products</td>
</tr>
<tr>
<td>BSCI</td>
<td>Business Social Compliance Initiative</td>
</tr>
<tr>
<td>C2C</td>
<td>Cradle to Cradle</td>
</tr>
<tr>
<td>CAS</td>
<td>Complex Adaptive Systems</td>
</tr>
<tr>
<td>CCC</td>
<td>Clean Clothes Campaign</td>
</tr>
<tr>
<td>CE</td>
<td>Circular Economy</td>
</tr>
<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>CIT</td>
<td>Contextual Interaction Theory</td>
</tr>
<tr>
<td>Cotton Pledge</td>
<td>Responsible Sourcing Network against Forced Child and Adult Labor in Uzbek Cotton</td>
</tr>
<tr>
<td>CP</td>
<td>Cleaner Production</td>
</tr>
<tr>
<td>CR</td>
<td>Corporate Responsibility</td>
</tr>
<tr>
<td>CSCMP</td>
<td>Council for Supply Chain Management Professionals</td>
</tr>
<tr>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>DCRT</td>
<td>Dutch Council for Retail Trade</td>
</tr>
<tr>
<td>Detox Campaign</td>
<td>Campaign of Greenpeace to reduce toxic chemicals in clothes</td>
</tr>
<tr>
<td>EFQM</td>
<td>European Foundation of Quality Management</td>
</tr>
<tr>
<td>EKO</td>
<td>Dutch Ecolabel for Biological Products</td>
</tr>
<tr>
<td>EPR</td>
<td>Extended Producer Responsibility</td>
</tr>
<tr>
<td>ETI</td>
<td>Ethical Trading Initiative</td>
</tr>
<tr>
<td>EU-Ecolabel</td>
<td>European Label for Environmental Impacts of Products</td>
</tr>
<tr>
<td>FLA</td>
<td>Fair Labor Association</td>
</tr>
<tr>
<td>FTA</td>
<td>Foreign Trade Association</td>
</tr>
<tr>
<td>FWF</td>
<td>Fair Wear Foundation</td>
</tr>
</tbody>
</table>
GOTS   Global Organic Textile Standard
GSCM   Green Supply Chain Management
IFC   International Finance Corporation member of the World Bank Group
ILO   International Labor Organization
InRetail   Dutch Non-Food Retail Sector Organization
IPP   Integrated Product Policy
ISO 9001  International Standard for Quality Management Systems
ISO 14001  International Standard for Environmental Management Systems
ISO 14040       International Guideline for Life Cycle Assessment
ISO 26000  International Guideline for Corporate Social Responsibility
LCA   Life Cycle Assessment
Made-By European not-for-profit organization for improving the environmental and social conditions in the fashion industry.
MCHM   Multi Criteria Hierarchical Model
MODINT Dutch trade association of manufacturers, importers, agents and wholesalers of clothing, fashion accessories, carpet and (interior) textiles
MSI   Multi Stakeholder Initiative
NBM   New Business Models
NGO   Non-Governmental Organization
OE   Organic Exchange
Oekotex Standard Product label for the assessment of the human ecological quality of textiles for consumers and manufacturers in the textile and clothing industry
OHSAS 18001 British Standard for an Occupational Health and Safety System
PaCT   Partnerships for Cleaner Textiles
PET   Poly Ethylene
RND   Dutch National Board of Non-Food Retail Associations
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSL</td>
<td>Restricted Substances List</td>
</tr>
<tr>
<td>SA-8000</td>
<td>International Standard for Social Accountability</td>
</tr>
<tr>
<td>SCM</td>
<td>Supply Chain Management</td>
</tr>
<tr>
<td>SME</td>
<td>Small and Medium sized Enterprise</td>
</tr>
<tr>
<td>SMETA</td>
<td>Sedex Members Ethical Trade Audit</td>
</tr>
<tr>
<td>Solidaridad</td>
<td>International civil society organization (NGO) facilitating the development of socially responsible, ecologically sound and profitable supply chains.</td>
</tr>
<tr>
<td>SSCM</td>
<td>Sustainable Supply Chain Management</td>
</tr>
<tr>
<td>Sumangali-system</td>
<td>Recruitment system in the textile and garment industries in India, in which typically young unmarried women are recruited from rural villages</td>
</tr>
<tr>
<td>TCOS</td>
<td>Technological, Commercial, Organizational, Societal</td>
</tr>
<tr>
<td>Textile Exchange</td>
<td>Textile Exchange is a global, nonprofit organization stimulating sustainable practices in the textile value chain (started as Organic Exchange)</td>
</tr>
<tr>
<td>Triple P</td>
<td>People, Planet, Prosperity</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environmental Programme</td>
</tr>
<tr>
<td>UNIDO</td>
<td>United Nations Industrial Development Organisation</td>
</tr>
<tr>
<td>VGT</td>
<td>Dutch Association of Large Textile Retail Companies</td>
</tr>
<tr>
<td>WCSDG</td>
<td>World Commission on the Social Dimension of Globalization</td>
</tr>
<tr>
<td>WEEE directive</td>
<td>European directive for Waste Electrical and Electronic Equipment</td>
</tr>
</tbody>
</table>
CHAPTER 1. THE IMPLEMENTATION OF SUSTAINABILITY IN SUPPLY NETWORKS-
THE PRESSURE WHY VERSUS THE CAPABILITY IF AND HOW

1.1. SUSTAINABILITY FROM PRODUCTION-SITE TO SUPPLY NETWORK LEVEL

The attention paid to sustainability aspects related to the economic activities of society in
general and more specific in companies, has increased in the last decades. Sustainability
has often been defined as behaving responsibly so that the next generation(s) can continue
to use resources and fulfill their economic demands (United Nations, 1987). Some critics
suggest that this definition focuses only on the environmental aspects of resources in
relation to the time dimension neglecting the geographical dimension of sustainability. Other
definitions (Savitz, 2012) include not only environmental aspects, but also social and
economic aspects and do not only focus at the impacts for the future but the impacts
currently caused in other regions/countries/continents as well. Sustainable development is
then being defined as taking care of social, environmental and economic impacts “here and
now”, “there” and towards the “future”. From this perspective the existing economic systems
often shift societal impacts towards other regions and generations and therefore sub-
optimizes in the “here and now” only. When companies start improving these sustainability
aspects voluntarily (not forced by legislation) in cooperation with their stakeholders, it is
known as Corporate Social Responsibility or CSR (Elkington, 1997).

Not only in the definitions but also in company practices, the approaches found in the
primarily focussed on the environmental aspects in relation to a specific production-
site/location. More recently these approaches are shown to be developing from production-
site to supply network level and have started including the social and economic aspects
related to the product and its supply network at an increasing level. Therefore, approaches
are widening in content and going deeper into the international supply networks.
Stakeholders demand more and more that attention should be paid to all sustainability
aspects and covering all phases of the supply network. Consequently, a company cannot
say they are “sustainable” when they manage the environmental aspects of their production
site exclusively in Europe. They should also show that they take care of the environmental
aspects in the other phases in the supply network and include the social (labor) conditions
and the economic aspects (fair wage/trade). For example, when chocolate is organic it will
not be recognized as being sustainable when it is produced by slaves or no honest price is
paid for it. Also, a T-shirt made from “organic” cotton produced under bad working conditions
and “fair trade” coffee produced with a lot of pesticides will not be recognized as being
sustainable.

Globalization of the world economy is an ongoing process. Materials, products and their
markets are increasingly following global patterns. For instance, materials used to produce a
mobile phone are mined in Africa, produced in China, and consumed in Europe. The location
of the materials, availability of cheap labor forces, and the position of the consumer groups,
determine the development of these global patterns. A great amount of transport is needed
to connect these different parts of the global patterns and make them work effectively.
International supply chains are progressively changing into global industrial networks.
Managing these networks, including many relevant societal aspects, is a complex matter and demands a systematic approach. Many actors are involved and often it is difficult to determine who is responsible for which aspect. Within these developments, the social and environmental aspects have also gotten more attention. This explains the mentioned strategy shift from site to supply network level. Many companies experienced this shift and this has led to many different sustainability strategies and related activities found in business and their supply networks today.

1.2. MANAGING SUSTAINABILITY IN SUPPLY CHAINS AND NETWORKS

Supply chains have become global and increasingly complex. In reality, supply chains are not linear chains, but have become complex industrial networks or webs. Understanding the dynamics of these so-called industrial supply networks is therefore complex issue. Theories from supply chain management and industrial network approaches are being integrated into new models and frameworks trying to understand and explain the dynamics of these complex networks. Due to pressure from different stakeholders, companies are making more of an effort to manage the side-effects of this ongoing process on society. These side-effects can be classified as social and environmental aspects. Even though it is sometimes said (Rock. M. et. al., 2009) that globalization could hold promises for improving sustainability aspects reality shows that it does not occur automatically.

Managing global supply chains requires increased attention to the political and cultural differences throughout these chains (Skjøtt-Larsen et. al., 2007). The “greening” of global product chains should, therefore, be undertaken on a global scale and involve the cooperation throughout the entire supply network including its sources that are often situated in developing countries (Vermeulen and Ras, 2006). The Corporate Social Responsibility (CSR) practice in the Investment Climate Department of the World Bank Group concluded that “the existing system of implementing CSR in global supply chains may be reaching its limits in terms of its ability to deliver further sustainable improvements in social and environmental standards” (World Bank, 2003). They state that the current practices seem to be based on a series of ad hoc and isolated decisions and, therefore, collaboration and a systematic approach are lacking. The international chamber of commerce (International Chamber of Commerce, 2007) along with the Dutch Social and Economic Council (Social and Economic Council, 2008) have asked to pay more attention to the implementation of sustainability in supply networks. The awareness and the number of experiments has grown, but the expertise and knowledge of how to organize and facilitate the implementation of sustainability aspects in complex global industrial supply networks appear to be still poorly developed (World Bank, 2003). Until now, sustainability seems to behave like an unknown phenomenon in supply networks.

As mentioned, the implementation process of sustainability is taking place in many different sectors. As a result, the question rises if the implementation process differs between these sectors. To illustrate the complexity and differences between sectors, two sectors have been selected. For the empirical research in this dissertation the “clothing” sector was selected. This sector is being selected because it is a global sector with many environmental and social aspects involved and many actors in the supply network. Also, the production of clothes predominately takes place in countries with low wages often situated in Asia. The rationalisation or this choice is further explained in chapter 3. Chapter 4 contains specific
Another important industrial sector is the “consumer-electronics” sector. This sector produces (small) electronic devices like iPhones, iPads, laptops etc. and because of its wide spread, global breadth, this sector is comparable to the clothing sector. It too causes many relevant environmental and social impacts in society. And also in this sector, the production of the products primarily takes place in low-wage countries in Asia. Important differences with the clothing sector are the governmental policies concerning the environmental impacts of the products, the prices of resources/materials in the market, the complexity of the supply network and the number of focal companies in the world market.

Because of the environmental impact of consumer electronics in the end of life phase the European Union adapted the WEEE directive. This directive on Waste Electrical and Electronic Equipment (Georgiadis et. al., 2004) used producer responsibility as a principle making the producer responsible for the environmental impacts of the products during their whole life-cycle. Stimulated by governmental policies like the WEEE directive, new activities are taking place in order to close the loop of the materials in consumer electronics (Chein et. al., 2007; Hu, 2006). However the rarity of the materials used in these products and the increasing prices of these virgin materials (Geyer et. al., 2010) have also played a strong role. Specifically, this responsibility for collecting and recycling the products in the end-of-life phase is very different with the clothing sector. there are no policies or legislation forcing producers of clothes to assume responsibility for the environmental impacts of their products in the end-of-life phase.

With regard to social impacts, the consumer electronics sector is facing very similar dilemmas as the clothing sector. Production predominantly takes place in Asian countries and the working conditions have also been frequently criticized in public (Smith et. al., 2006; Sandoval, 2013). Different initiatives for the improvement of the working conditions in the electronics sector have been developed. For example, the Good Electronics Network (Good Electronics, 2015) is monitoring and helping to improve workers’ rights in the global electronics sector. It supports the trade unions that play, in their view, a key role in social dialogue and collective bargaining, developing good industrial relations between trade unions and employers. Many other multi-stakeholder initiatives in this sector can be found (SOMO, 2013). No specific social certification schemes specific for the electronic industrial sector exist. General standards like the SA8000 and the OHSAS18001 are available but are not frequently used. The external pressure to act might be felt to a lesser degree as in the clothing sector. A large scale accident as that which occurred in the clothing industry in Bangladesh in 2013 has not (yet) occurred in the electronics industry.

Another difference between the two sectors is the complexity of the supply network and the number of focal companies. As described in chapter 4 the clothing sector is a very complex sector with many actors involved and many changing relations between all these actors. Specifically, the number of garment production companies, often being situated in Asia, is enormous and many of them are (very) small. Between these garment production factories and the brands, a very complex situation occurs in the supply network. And also, the number of brands being the focal companies in the clothing supply networks is very high. Even though this number sometimes seems to be limited because the public media only pay attention to the big, well-known, brands. In the consumer-electronics sector the amount of
brands is much lower than in the clothing sector. Consequently, a limited number of rather big companies dominate the world market. The market and the supply networks are less complex because intermediates are less used. When comparing the focal companies of the consumer-electronics sector with that of the clothing industry, a more direct relation between the production companies can be seen. This makes the communication and the control of the conditions more transparent.

The examples of the implementation of sustainability in the “clothing” and the “consumer-electronics” sector show the complexity and diversity of the process. This makes integrating the implementation of sustainability into integral theoretical supply networks models and frameworks difficult. The literature shows that a variety of approaches for the relation of sustainability with these network dynamics have been developed and published. But an integral approach needed to understand the implementation of sustainability in supply networks, is difficult to find. Even though integral approaches are sometimes suggested, frameworks often seem to lean towards a specific discipline, angle or focus to analyse the process. Literature concludes that several factors will need more attention in the further development of the theories and frameworks for explaining the implementation of sustainability in supply networks. Factors mentioned are; the nature of interorganizational relations between the focal company and its suppliers; the capacity of an organization to learn about the business-natural environment and to manage this knowledge; the capability of the focal company to react and the capability and experience to develop interdisciplinary and cross-functional cooperation.

In section 1.3. the aim of the research and the selected (sub)research question(s) based on the situation review are explained.

1.3. THE RESEARCH OBJECTIVE AND THE RESEARCH QUESTIONS

Many different strategies for the implementation of sustainability in supply networks can be found. An important question that remains is why companies, of more or less the same size and power, and influenced by the same external pressures, choose different strategies concerning sustainability in their supply network. Existing research focuses extensively on the questions why and the description of what happens to improve sustainability in industrial supply networks. It neglects or skirts around the question of how strategies are being developed and which internal factors influence this process. Therefore, to fill in this gap, this research specifically focuses on this question.

The academic aim of this research is to improve the understanding of the decision making process through which individual companies develop their sustainability strategies in order to enrich existing theories and frameworks. By answering this, insights in the factors that influence the choices made will be gained, and the routes the decision making processes follow.

The societal aim of the research is to answer the question what can be done to speed up the implementation process of sustainability in supply networks?
Based on a review of the present situation and the research objective the research question was formulated as:

“How can the variety in sustainability strategies found in the supply networks of individual “focal” companies be understood?”

Based on this research question the following five sub-research questions were formulated:

1. Which gaps can be found in the existing theories and frameworks regarding the implementation of sustainability in industrial supply networks?
2. Which approaches could be used to close the gap and what will this new framework look like?
3. To what extent can the factors in the new proposed framework explain the variety in sustainability strategies?
4. How can the decision making processes for the development of sustainability strategies in supply networks be understood and how can this insight be related to the factors in the newly proposed framework?
5. Which conclusions can be drawn and which recommendations can be formulated to speed up the implementation process of sustainability in industrial supply networks?

1.4. READERS GUIDE

This research contains a theoretical and an empirical component, the results of which are both presented in this dissertation.

Chapter 2 presents the results of the theoretical portion based on a literature review and answers the sub-research questions 1 and 2. The chapter starts with explaining the methodology used for the literature review. As a result of the review the different theories and frameworks found are summarized and analysed, gaps are identified and a new theoretical framework is presented. Finally, the theories for analysing decision making processes are summarized and a theory is selected to be used in the empirical portion of the research.

Chapter 3 explains the research strategy used for the empirical research. As mentioned before, the fashion and clothing sector was selected for the empirical research. Chapter 3 begins with an explanation of why this sector was selected. The empirical research was conducted to answer sub research questions 3 and 4. To answer sub-research question 3 a survey was conducted. Chapter 3 explains in detail how this survey was conducted. To answer sub-research question 4 a case study approach was selected. This chapter thus continues with an explanation as to the reasons why and the way this approach was made operational.

Chapter 4 introduces the clothing sector by explaining the complexity of the global supply networks and the social and environmental aspects related to it. This chapter also summarizes and explains the many activities developed by different actors involved to improve the different sustainability aspects in the clothing supply network. This chapter,
finally, presents the general characteristics of the respondents of the survey held under focal clothing companies in the Netherlands as part of the empirical research.

Chapter 5 presents and analysis the results based on the answers given by the respondents that participated in the survey described in chapter 3. Further, different characteristics of the respondents are related to the sustainability activities and strategies found to test the liability of the principles used in the new theoretical framework that was presented in chapter 2.

Chapter 6 presents the results of four case-studies that have been conducted to answer sub-research question 4. How these case studies were selected, how the data were collected, and how the analysis have been conducted is explained in chapter 3. The decision support theory used to answer this sub-research question is explained in chapter 2. The results are presented per case based on the factors of the proposed framework and the decision support theory that were used. The chapter ends with cross-case analysis and the conclusions that can be drawn.

Chapter 7 brings together the results of the theoretical and the empirical part of the chapters 2, 5 and 6, and answers the research question(s). During the years that the survey and the case studies were conducted literature continued to be published about the implementation of sustainability in supply networks. The debate continued and the insights increased. For this reason, after the survey and the case studies had been conducted an additional literature review took place analyzing relevant publications in more recent years. The results of this second literature review are presented in chapter 7 and are compared with the results of the literature review in chapter 2 and the results of the empirical results presented in the chapters 5 and 6. In addition to conclusions and recommendations concerning the academic insights also conclusions and recommendations are formulated concerning the societal value of the research that has been conducted.

The reference list presents the literature analysed and the appendices I-VI show details of the methodology used in the empirical research and some more detailed results.
CHAPTER 2. INNOVATION CHARACTERISTICS AND THE DECISION MAKING PROCESS WITHIN THE FOCAL COMPANY: EXPLAINING THE DEVELOPMENT OF SUSTAINABILITY STRATEGIES IN THE SUPPLY NETWORK

A summarized version of the sections 2.2-2.5 was published as an article in the Journal of Cleaner Production (van Bommel, 2011).

2.1. INTRODUCTION

Chapter 1 raised the question of why companies, of more or less the same size and power, and influenced by the same external pressures choose different strategies for the implementation of sustainability in their supply networks. This question has also been raised in many other publications but was, until now, not satisfactorily answered.

This chapter summarizes the existing approaches and frameworks that were found and goes in-depth into these approaches from an innovation perspective and the decision making processes. It can be seen as a contribution to the request in the literature (Vermeulen and Seuring, 2009) to formulate new concepts and theories for analyzing and understanding how the implementation process of sustainability in supply networks occurs.

Because of the broad definition of sustainability and therefore the wide range of disciplines included in it, the literature search covered many journals and many different key words were used. The search started with defining four groups of keywords. They were “sustainable/environmental/social”; "theories/models/frameworks”; “supply chains/industrial networks” and “dynamics/implementation/changes”. Within each group synonyms were defined and different combinations of the keywords and synonyms were used to search for literature. The literature lists of relevant publications found were used to search further. By using this so-called knock-on approach, twelve journals were eventually selected. They cover the environmental/business perspective; the social ethical perspective and the supply chain/network perspective.

Based on the results of this literature, it was concluded that an “innovation” approach could improve the existing frameworks found. Also, it was recognised that in order to understand the development of sustainability strategies in the focal companies and their supply networks, insight into the decision making process would be needed. For this reason, the literature review was expanded towards innovation approaches concerning supply network dynamics and models to analyse and understand decision making processes.

This chapter begins with summarizing the historical development of supply chain management approaches and industrial network theories in section 2.2. Secondly, the current insights into supply chain and network dynamics in general and more specifically on the development of business strategies are discussed in section 2.3. Thirdly, the different perspectives of the management of global industrial supply networks concerning the implementation of sustainability are described and analyzed in section 2.4.

Based on the analysis in section 2.4 it was concluded that analysis of the innovation strength of and the decision making process within the focal company could improve the
understanding of the implementation of sustainability in supply networks. For this reason, section 2.5 the innovation approaches found are analyzed and based on the results a new framework is presented.

Concluded was also that more insight in the decision making process concerning the development of the implementation strategies for sustainability in the supply networks in the focal companies was needed. Consequently, different approaches and theories found in literature were analyzed and in section 2.6 the approaches found are summarized and conclusions are drawn.

The presented results in the sections 2.5 and 2.6 were used to conduct the empirical research and in chapter three is explained how these selected theories have been made operational.

2.2. SUPPLY CHAIN AND INDUSTRIAL NETWORK MANAGEMENT

Supply chain management is seen as the interdisciplinary field for describing and analyzing the processes in supply chains. Due to globalization and specialization, supply chains have become highly complex with many actors involved. The Council of Supply Chain Management Professionals (CSCMP) states that supply chain management is about the planning and management of all activities involved in sourcing, procurement, conversion and logistics management. It includes the coordination and cooperation with the diverse chain partners which can be suppliers, intermediaries, service providers or customers (CSCMP, 2015). Another definition states that a supply chain is a set of organizations directly linked by one or more upstream and downstream flows of products, materials, services, finances and/or information from a source to a customer and supply chain management is the management of such a chain (Mentzer, 2001). Supply chain management therefore integrates traditional disciplines like operations management, logistics, procurement and information technology into an interdisciplinary approach. The key supply chain processes stated by Lambert (2000) are: “customer service management”, “procurement”, “physical distribution”, “outsourcing/partnerships”, “performance measurement”, “manufacturing flow management”, “product development and commercialization” and “warehousing management”. The variety of processes involved shows its complexity. As a result many organizations in the last decades have been focusing on core competences and tried to become more flexible. They did that for example by reducing the ownership of raw material sources and the distribution channels. These activities have been increasingly outsourced to other firms. This process has increased the number of actors involved in the supply chain and therefore made managing the supply chain much more complex.

In reality, the complexity is even bigger because supply chains are not linear chains but complex networks with many changing connections between the different actors within the network. The process of globalization has strengthened this complex picture of global networks or webs. As a result, the relations between the different actors have become extremely complex and diverse. Lines can be drawn through the networks, symbolizing the chains, but these lines can change radically and swiftly. A well-known theory addressing this complexity is the industrial network approach. This theory defines three relevant components: resources, activities and the actors. An industrial network is defined as: “All of the actors within one industrial sector, or between related industrial sectors, who can (potentially) cooperate to add value for the consumer” (Håkansson and Snehota, 1995). It
would appear that the supply chain structure is often highly influenced by the resource structure. Therefore, how resources are controlled is a criterion for selection and also determines the relevant actors and their activities. These activities are the commercial, technical and administrative functions of individual firms. In the network, these activities from the different firms are linked together. The performance of the network depends upon the quality of each activity and the links between them. The third industrial network component (actors) can be organizations or individuals.

In Lazzarini’s et. al. (2001) study of netchains, he interprets and integrates supply chain and network perspectives. While supply chain analysis focuses on vertical and network analysis on horizontal interdependencies across companies, netchain analysis incorporates both type of interdependencies into one concept. Netchain analysis emphasizes value creation and coordination mechanism sources corresponding to different kind of interdependencies. In practice, netchain analysis is often used in a more general way referring to the perspective that takes into account chain and network characteristics as well. However, it differs in the focus and in the tools used from network science. In the more practical perspective the word netchain is sometimes used instead of "chain and network". The simplest situation is for companies to form a supply chain or network in which they are selling product to each other. The phrase netchain captures the two main aspects of the collaborations. The word chain reflects here the hard aspect, where materials/products and money are flowing (chain) and the word network reflects the more soft aspect, the network of people having informal relationships.

The two approaches seem to use a very different approach but integration has increasingly been seen as a more realistic view on this field. To reduce the confusion between the supply chain or network approach in this publication from now on the term ‘supply network’ will be used.

2.3. SUPPLY NETWORK DYNAMICS

To understand how sustainability is and will be implemented in supply networks the dynamics of supply networks in a globalized world economy should be understood. It is assumed that the implementation of sustainability in supply networks will follow the same patterns as other dynamics in supply networks. In literature many different approaches are found for understanding these dynamics and they are briefly summarized and analyzed here.

Three main approaches are distinguishable: the technological and economical approach, the interorganizational approach, and the complex systems approach. The technological/economical approach represents the rational way of thinking and focuses on using materials, information, money and other resources to manage the supply chain processes in an effective way. This approach is based on an engineering and economic perspective (Schneideweind, 2003), a resource based view (Halldórsson et. al., 2003), and focuses on improving the effectiveness of the material, information and financial flows through the supply networks. This approach uses engineering and economic tools such as pinch analysis (Gelderman et. al., 2007), life-cycle analysis, and transaction cost analysis (Halldórsson et. al., 2003). The strategies and activities are chosen based on the results of these rational analyses and are frequently managed top-down through the supply network. The interorganizational approaches focus on the relation between actors (organizations and
individuals) in the supply network and the way they cooperate, stimulate and influence each other. They can be seen from a network perspective (Halldórsson et. al., 2003) or a more social/cultural perspective (Schneidewind, 2003) where the supply network is seen as being a social system with normative and interpretive schemes. The complex system approach defines a supply network as a complex adaptive systems (CAS), and proposes that many supply networks emerge rather than being a result of purposeful design by a singular entity. To become a successful network the emergent patterns should be managed by freedom and stimulation (positive feedback) whereas, in reality, supply chain management literature primarily emphasizes negative feedback (Choi et. al., 2001). This approach not only asserts that the supply chain is a complex network, but also emphasizes the incapability of managing it. Traditionally, technological and economical approaches dominated the literature on supply network dynamics. Recently, the literature has expanded to include inter-organizational approaches. While the technological and economical approaches remain, they now seem to have become part of a wider interorganizational management context. The complex system approach gives few insights into the managing of supply networks. It appears to be too complex and is rarely deemed useful in practice.

In all these approaches (except CAS), the question remains: who is managing the dynamics in the supply network? In the literature, the so-called “focal” company in the center of the chain or network (Lambert and Cooper, 2000) is seen as the most important actor in this process. The focal company is the company that doesn’t make the network but has the biggest influence on the supply network dynamics because of its strategic position or power. In the literature, this “focal” company is sometimes called the “leading” firm (Gereffi, 1999) or “focal” firm (Chen and Paulraj, 2004). A single “focal” company cannot always be easily distinguished and sometimes “multiple” focal companies are found in the supply network. This makes analyzing the dynamics complex because the interaction between the “multiple” focal companies have a large influence on the dynamics of the entire supply network. Individual strategies can strengthen a specific development but they can also conflict with and frustrate each other’s strategies.

A theoretical framework for supply chain management that distinguishes the driving forces, the approaches and initiatives, and the performance as the building blocks for the framework was proposed by Chen and Paulraj (2004). Driving forces include environmental uncertainty, customer focus, and information technology. The approaches and initiatives are classified into four streams: strategic purchasing, supply management, logistics integration, and supply network coordination. Performance is analyzed from a supplier and buyer perspective. The framework shows, that of the four approaches and initiatives streams, the logistics integration and the supply network coordination literature are dominated by the technological/economical approach. Logistics integration is defined as the process of planning, implementing and controlling the flow of goods, services and related information. Supply network coordination literature emphasizes mathematical modeling. The strategic purchasing and supply management streams reflect the inter-organizational approach within the research framework. Important factors mentioned within these two streams are: communication, supplier base reduction, long-term relationships, supplier selection, supplier certification, supplier involvement, cross-functional teams, trust and commitment (Chen and Paulraj, 2004)

Another framework (Gereffi, 2005) focuses on three variables that influence the shift of governance structures in ‘global value chains': the complexity of transactions, the ability to
codify transactions, and the capabilities in the supply base. Their framework proposes five types of governance in a global value chain. Vertically-integrated firms (hierarchies) and market-based relationships among firms are on the opposite end of these five types. Three different network types (captive, relational, and modular) can be distinguished between these two ends. All three are influenced by a “lead-firm” or “focal company” but in different ways and Gerrefifi (2005) argues that the governance structures can evolve over time.

The “five forces model” (Porter, 2008) defines five categories of driving forces influencing the process of strategies being developed. The five forces defined are: threat of the entrants; threat of substitute products and services; bargaining power of customers (buyers); bargaining power of suppliers and the intensity of competitive rivalry. Based on criticism, an important extension was made by other authors (Rugman et. al., 2000). The so-called sixth force, representing the government and societal pressure groups, was found to be missing as an important driver for strategy development and innovations in companies in the five forces model.

Supply and network management theories often focus on organizations, despite individuals and their decisions being more influential on the interactions between the different actors. Trust is recognized as being an essential element of successful inter-organizational relationships. Because trust is often based on individual relationships, the influence of individuals on the management of industrial networks in research can, therefore, be underestimated.

Related to the importance of trust, is the concept of socialization which is also seen as being relevant for achieving improvements in supply networks (Cousins et. al., 2006). Socialization implies, for example, activities like supplier conferences, conducting on-site visits, and the development of joint buyer/supplier teams. These socialization activities are increasingly seen as stimulating mechanisms in facilitating and enhancing the supply chain integration. Similarly, Hofstede (2006) states that improvements in chains and networks should be based on experimental learning and cultural dimensions should be part of these experiments. This perspective of social capital has become prevalent in the supply network literature (Cousins et. al., 2006; Hofstede, 2006).

As can be seen in the previous description of the different approaches, there has been a shift from the resource-based and economic perspective towards a perspective that includes the inter-organizational and social innovation approaches. It is becoming apparent that for a better understanding of the dynamics, the social/cultural perspective requires more attention. Concluded is that the presented models for understanding supply network dynamics hardly take internal factors of the focal company, that represent the capability of the company to react on the external driving forces, into account. Also, the concept of socialization in supply networks (Cousins et. al., 2006; Hofstede, 2006) stretches the importance of cultural dimensions and the role of experimental learning.

2.4. THE IMPLEMENTATION OF SUSTAINABILITY IN SUPPLY NETWORKS

In order to understand how sustainability is being implemented in supply networks a brief description of the historical concept of sustainable development will first be provided. Based on the defined concept different approaches and related frameworks for the implementation
in global supply networks will be presented and questions will be raised on the gaps in these frameworks.

2.4.1. SUSTAINABLE DEVELOPMENT AND CORPORATE SOCIAL RESPONSIBILITY

Many different views on and definitions of sustainable development can be found in literature. The definition used most frequently and is often viewed as being a starting point of the concept itself is the definition provided by the Brundlandt committee published in the report Our Common Future (United Nations, 1987). In this report sustainable development was defined as a:

"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"

This definition focuses predominantly on the depletion of resources from the environmental perspective and the responsibility for the next generation. In the report, and in later publications concerning sustainable development, it was recognized that improving the environmental aspects cannot be seen separately from improving the social and economic aspects. This insight forced the definition of sustainable development (Elkington, 1997) to change towards a more holistic approach focusing on the balance between environmental (planet), social (people) and prosperity (economic) aspects towards the future. The principle states that these three aspects should be in balance and all three above the bottom line, sometimes called the triple bottom line (Savitz, 2012). Stated is that for a long term stable economic development a basic level of environmental and social quality is a requirement. Because the economy is built on the resources (planet) and the labor (people) as production factors the economy cannot survive in the long term while ignoring the quality of these two pillars of the economy.

When working on sustainable development is seen as a public responsibility, the government will often be seen as the main actor to take the lead with policies and legislation. In many countries the governments have made many policies and laws to protect the environment and the labor conditions in the last decades. Sometimes these policies are successfully enforced at a high level and sometimes with little enforcement. Due to globalization the supply networks have become more and more global and therefore international. Even broad based European governments cannot cover the networks with their policies and laws anymore. This has made the traditional role of governments for taking the lead in societal themes hard or even impossible to fulfill. The United Nations, the World Bank and other global organizations try to fill this gap by stimulating the implementation of social and environmental concerns in supply networks in their Global Compact program (Rasch and Kell, 2010). The CSR Practice in the Investment Climate Department of the World Bank Group concluded that “the “existing” system of implementing CSR in global supply chains may be reaching its limits in terms of its ability to deliver further sustainable improvements in social and environmental standards” (World Bank, 2003). The current practices seem to be based on a series of ad hoc and isolated decisions and therefore collaboration and a systematic approach are lacking. The World Bank recognizes the need to develop more insight and knowledge on how the implementation of sustainability in the complex worldwide supply networks occurs. And the World Bank recommends that a more integral and holistic approach is needed to make the implementation of sustainability in supply networks successful. At the same time the pressure from society to continue the process of implementing sustainability aspects in the supply networks is increasing. Accidents like the
collapse of the textile factory in Bangladesh in 2013 and the poor air quality in many Chinese cities due to industrial production for the world market, boosts this pressure. Because the information technology to exchange information concerning these conditions is available worldwide these pressures develop very quickly.

Concluded is also that the public awareness related to these circumstances does not seem to influence the large majority of the consumers. Many consumers are aware and worried but they do not see it as their personal responsibility to put pressure on the companies by changing their consumer behavior. They hold the companies and their partners in the supply network responsible and they expect them to behave responsibly without bothering the consumer (Oberseder et. al., 2011). And, as mentioned previously, the governments are not organized at the correct level. Local governments could have influence on the situation in their country/region but in developing countries the governments will often give priority to the economic aspects to create employment and reduce poverty. The choice between economic development and strict conditions concerning social and environmental aspects shows to be a dilemma for these governments.

In society the public awareness seems to be represented by the Non-Governmental Organizations (NGO’s). They are often seen as the conscience of society and they can take over the traditional role of the governments in asking for responsible behavior from companies in their supply network (Nijhof et. al., 2008). NGO’s have become strong and powerful organizations and they are often organized at international/global level. They increasingly put more pressure on the companies and less on the consumers and the governments. This development is seen as an important reason for companies to develop strategies and activities for improving social and environmental impacts of their activities throughout their supply network. The public actions of the NGO’s will also influence other stakeholders, like the shareholders, employees, suppliers and other partners in the supply network.

This development is often mentioned in literature as Corporate Social Responsibility (CSR) and it is defined as:

"the responsibility of enterprises for their impacts on society"

The European Commission encourages that enterprises "should have in place a process to integrate social, environmental, ethical human rights and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders" (European Union, 2011). As the definition states it is about taking responsibility for social, environmental, ethical and consumer aspects related to all the activities in their supply network. It should be integrated in the regular business operations which means that a CSR policy separate from the general business strategy/policy is not accepted in this approach. The close collaboration with the stakeholders means that the CEO/management of the company cannot decide which aspects will get priority without being transparent to all stakeholders about this decision. Often the “voluntary” approach is also mentioned in definitions for CSR, meaning that the enterprise should take action on the selected societal aspects beyond legislation (Moratis and Cochius, 2011).

As a reaction to this pressure from NGO’s, companies have increasingly begun joint improvement programs in cooperation with these NGO’s, often without governments and...
consumers being involved (de Bruijn and Tukker, 2002). A good example of such a joint program is the Fair Wear Foundation. This multi stakeholder initiative aims to improve the working conditions in the supply network of the clothing industry and was founded in 2008 (Fair Wear Foundation, 2009). The NGO Clean Clothes Campaign (2013) cooperates in the foundation with the sector organization and the fashion/clothes focal companies. The government and also the consumer organizations are not on the board of the foundation. More details about this Fair Wear Foundation are explained in chapter four.

In this publication the implementation of sustainability in supply networks is defined as the strategies and activities found for improving social and environmental aspects in the supply networks of the focal companies beyond legislation.

2.4.2. ANALYZING THE IMPLEMENTATION OF SUSTAINABILITY IN SUPPLY NETWORKS

An traditional approach concerning the implementation of sustainability in supply networks was already in the 1990s known as “integral chain management” and defined as supply chain management that takes environmental and social issues into account. In a literature review (Seuring and Müller, 2007) three “integral chain management” schools were presented: material and information flow school, strategy and cooperation school, and regional industrial network school. This regional industrial network school focuses on regional (not global) networks from the perspectives of different industrial actors. Even though they are an integral part of the definition of sustainability, the social aspects were excluded from the “integral chain management” practices. The implementation of sustainability in chains and networks seems to focus mainly on the environmental aspects (Forman and Sogaard, 2004; Hall, 2000). Pesonen (2001) used life cycle assessment methods to select management priorities on environmental aspects and van Bommel and Bugge (1998) discussed the upgrading of environmental management systems from “site-level” to “supply-chain level”. The international standard for environmental management systems (ISO14001) does mention the responsibility for the environmental aspects also in the supply network of the company but in reality, the management systems focus mainly on the environmental aspects at location level. The certification procedures demand that the review of the environmental aspects of the activities should include one step backwards and one step forward in the supply network. And these environmental aspects should be included in the environmental policy and related improvement programs. But in reality, these aspects are hardly being seen as the responsibility of the company and are not being developed as part of the Environmental Management Systems.

In the literature, the term Green Supply Chain Management (GSCM) replaced integral chain management which indicated that environmental aspects were indeed dominating the social aspects. The word “greening” is used as a synonym for “environment”. A great deal of research has been published on “green” practices and why “greening” takes place. Less documented is how the process of “greening” occurs related to the different aspects and characteristics off the specific chain. Articles published on integral chain management and green supply chain management were mainly found in environmental journals (Boons, 2002; Sarkis, 2006). The environmental researchers (often being biologists, chemists, engineers etc.) were mostly focusing on a rational technological approach.

Some years later the logistic, operations management and supply chain management research groups started publishing more about the implementation of sustainability in supply networks (Kleindorfer et. al., 2005; Jayaraman et. al., 2007). Also the focus of this discipline
was primarily on environmental aspects and the rational/technological approach which had also been presented by the environmentalists. The word “green” is also frequently used in this discipline. Green supply chain management is defined as an interdisciplinary concept that links logistics with sustainability (Besbes et al., 2013). Approaches that focus on the life cycle of the products and develop remanufacturing activities using reverse logistics to design a green supply chain are mainly used. The challenge is to close the loop of resources using the same supply chain logistics but now in the opposite direction. Methods like Life Cycle Assessments, LCA, are used to determine the environmental impacts throughout the life cycle of the product. Based on the results, improvement measures in the supply chain are being selected. Sometimes analyses do not contain many different environmental impacts but focus exclusively on Carbon Dioxide for optimizing the carbon footprint of the supply chain (Gautier et al., 2013).

The question has been raised if reducing the environmental impacts (greening) in the supply chain of regular products will also lead to the development of products that cause less environmental impacts. This development of greener products is being defined as “green innovation”. Concluded was that indeed this relation was positive (Seman et al., 2012).

Together with the change in society from the environmental management approach towards a wider Corporate Social Responsibility approach (Cramer, 2008), social aspects in the context of sustainability received more attention. The process of the globalization of industrial supply networks resulted in many developing countries becoming the production site for developed countries. Societal values (people) became part of the responsibility for the environmental impacts (planet) and they entered the public debate on corporate social responsibility. Child labor, working/labor conditions (Kortelainen, 2008) human rights and poverty were addressed by management throughout the whole supply network. Research on how management is addressing these social aspects in supply networks has been conducted and has been published in social and ethical journals (Mamic, 2005). From this ethical perspective, the research that was conducted follows the interorganizational approach and focuses mainly on the implementation of codes of conduct, guidelines and conventions. Publications in operations management journals attempt to show how attention to social aspects in purchasing and logistic processes influence supply chain relations. Empirical findings show that increased involvement of purchasing managers in socially responsible activities can lead to improved trust in and commitment to suppliers (Carter and Jennings, 2002, 2004). Although it appears that the social aspects within the wider context of CSR and the supply networks have only more recently received attention in the literature, such research is actually not new. Stakeholders theories and social life cycle analysis (Freeman, 1984) has already been applied for some decades to determine the social aspects in the supply network and to prioritize them towards a strategy and selective activities.

Apart from the attention paid to environmental (planet) and social (people) aspects in the supply networks, there is also more and more interest in the “prosperity” aspects, the third element of sustainability. This is not because these aspects are new, but because they are now becoming part of a wider corporate social responsibility/sustainability approach. “Fair trade” initiatives are well-known for their focus on paying a fair price to the producer at the beginning of a supply network. From this perspective, these initiatives have already, for many decades, paid attention to economic development, community development and reduction of poverty by business through activities in their supply networks. Fair trade
initiatives began with food products (coffee, bananas, etc.) but have expanded towards clothes and other products. Pressure to integrate environmental and other social aspects into fair trade initiatives is increasing because of the demands from stakeholders for an integral CSR policy (Raynolds et al., 2007).

2.4.3. FRAMEWORKS FOR ANALYZING THE IMPLEMENTATION OF SUSTAINABILITY IN SUPPLY NETWORKS

Only a few frameworks in the literature analyze and describe the process of implementing sustainability in supply networks. In this subsection the main frameworks found are summarized and conclusions are drawn on the questions that remain and the related gaps in these frameworks.

Kleindorfer et al. (2005) used a framework for the acceptance of the four stages of the operations function. The aim was to create value and strategic success, and to present a dynamic framework for pursuing sustainability in operations management. The framework distinguishes necessary changes in internal and external strategies, both currently and in the future. Another framework of sustainable supply chain management integrates theories from sociology and political science, economics, biology, strategic management and competitive advantage. The goal of the presented framework was to link environmental, social and economic goals in a wider strategic perspective. Stated is that many companies now implement social and environmental initiatives that are fragmented and disconnected from their general strategy. His propositions focus on the improvement of so-called economic sustainability related to specific characteristics of the supply network (Carter and Rogers, 2008).

From the economic dimension, authors often tried to answer the question: under which circumstances does it pay to be green? Five approaches that companies can take to integrate the environment into their business are distinguished and discussed as well as under which circumstances these approaches can lead to economic success. The approaches mentioned are: differentiating the products and command higher prices for them; "manage" the competitors by imposing a set of private regulations or by shaping the governmental rules; cut costs and help the environment simultaneously; improve the management of risk; make systematic changes that will redefine competition in their markets. These different approaches are illustrated with examples and circumstances and explain the differences mainly with external factors (Reinhardt, 1999).

To support decisions in the process of greening supply chains, Sarkis (2003) developed a strategic decision framework. His framework considers the integration of environmental factors into strategic and operational decisions. The goal of the framework was to support the evaluation of alternatives.

The focal company can also be placed in the middle of and from that position the framework presents three parts: triggers for sustainable supply-chain management, supplier management for risk and performance, and supply chain management for sustainable products (Seuring and Müller, 2008). In the first part, the triggers are the external pressures and incentives. They come from many different stakeholders, but two specific groups are seen as being particularly relevant and are, therefore, explicitly situated in the framework. These groups are the government and the customer. The second part of the framework defines a defensive strategy by the focal company. This defensive strategy focuses on the management of suppliers to reduce risks and improve performance. Within this strategy, the
focal company uses conventional methods within supply management practice and is expanding these methods towards social and environmental aspects. Improvement of performance will not exceed the existing inter-organizational and technological approaches in the supply network. The third part of the framework presents an offensive strategy towards the development of sustainable products. This strategy needs the development of new supply network structures and, therefore, cooperation among a wider range of companies in the supply network.

The external pressures and incentives shape and influence the sustainability strategy selected but do not mechanistically determine it (Aragon-Correa et. al., 2003). It was suggested that empirical studies should consider the influence of the relation between an organization’s general business environment and the internal factors influencing the strategy. It was argued that the results of this research will advance the literature by explaining why certain firms continue with reactive strategies while others become proactive. The capacity of an organization to learn about the business-natural environment and to manage this knowledge is mentioned as a factor that might influence the strategy that is selected.

Categorizing generic types of competitive environmental strategies that might help managers optimize the economic return on environmental investments towards competitive advantage is found to be another approach (Orsato, 2006). This framework also mentions, besides the structure of the industry, the position within that industry and the type of markets, also the capability to react as a factor that can and will influence the choice of the selected strategy. Research on pressures resulting in practices and performances found in Chinese companies was carried out by Zhu et. al. (2005). Results show that many pressures are felt by the companies. Based on these pressures many strategies and activities are found. It has been recognized was that for some expected activities, inter-disciplinary cross-functional cooperation is required and that the characteristics of the company will determine if they are capable of developing these activities. Kogg presents another framework to conceptualize different approaches to implement upstream CSR, based on case studies from the textile sector (Kogg, 2009). Also within this framework the importance of interorganizational management was recognized. One of the important factors mentioned is the nature of interorganizational relations between the focal company and its suppliers. Concluded is that the frameworks found describe, analyze and support the understanding of the implementation process, but do not explain why companies in similar positions choose different strategies. The capability of the specific focal company and the supply network to react under pressure shows to be barely acknowledged in existing frameworks (De Bakker and Nijhof, 2002). It appears as though socialization, experimental learning, and innovative approaches found in the literature on supply network dynamics in general have yet to be integrated into the frameworks concerning the implementation of sustainability into supply networks. Important factors are mentioned but have not yet been specified or made operational in frameworks. Some of these important factors are; the nature of interorganizational relations between the focal company and its suppliers; the capacity of an organization to learn about the business-natural environment and to manage this knowledge; the capability and experience to develop interdisciplinary and cross-functional cooperation.

To improve the understanding of the implementation of sustainability in supply networks more insight into the capability of a focal company to act as well as into the internal decision
making processes within the focal company is needed. The capability to act can be seen as the innovation capacity or strength of the organization. That’s is why in section 2.5 the innovation perspective is presented leading to a new conceptual framework incorporating innovation characteristics of the focal company and its network.

The new framework states that innovation characteristics of the focal company could possibly explain the strategies and activities but this approach is static and does not contain a process element. The decisions to develop a certain strategy and join activities might be related with these characteristics but the answer to the questions how these decisions are being made remains unanswered. That is why decision support models have also been analyzed. The results are presented in section 2.6.

2.5. THE IMPLEMENTATION OF SUSTAINABILITY IN SUPPLY NETWORKS FROM AN INNOVATION PERSPECTIVE

2.5.1. INTRODUCTION
Based on the conclusions drawn in section 2.4 this section will explore the innovation perspective on supply network dynamics. Based on the insights gained, a new framework for the implementation of sustainability in supply networks from an innovation perspective is presented.

2.5.2. INNOVATION APPROACHES FOR UNDERSTANDING SUPPLY NETWORK DYNAMICS
The processes of supply network dynamics can be seen as an innovation (Omta, 2002, 2004). Innovation, in this perspective, corresponds to the classic definition identified by the well-known economist Schumpeter. He described innovation as the development of new combinations. These new combinations can be related to a product, technology, new market or the introduction of a new organization structure and/or strategy (Schumpeter, 1934.) The new organization structure can be within an organization but also new structures in the supply network. Also, Porter (2008) concluded that companies approach innovation in a broad sense and that it includes both new technologies and new ways of doing things.

Innovation can be a process within one individual company, but, in practice, nearly every innovation process will influence the partners in the supply network. Therefore, these innovations can be called institutional or system innovations. The processes are complex because many actors are involved. In addition to the different business actors, the government, NGOs and the (organized) consumers (also representing the sixth force of the Porter model) participate in the innovation process of the supply networks. The innovation process is not linear but includes several forward and backward loops. The approach is very much connected with the overall corporate strategy of an organization because of the importance of constantly innovating products, services and processes in a highly competitive business (Tidd, 2009).

The four dimensions of innovation, called the “4Ps” (Francis and Bessant, 2005) represent the product (service), the process, the position and the paradigm (mental model). The dimensions are often indistinguishable in isolation but changes within one dimension is automatically followed by changes in one or more of the other dimensions.

Based on the innovation strategies and activities found, the following four different innovation-levels can be distinguished: technology-based, demand-oriented, hybrid and
open-network innovation (Gracht et al., 2010). The levels were originally presented as the development of innovation approaches over time however, the different levels can still be recognized in industry in practice and are used to characterize the dominant approach in a specific organization. The technology based innovation assumes that technological development lies at the center of innovation. Companies that fulfill the characteristics of this approach develop technologies through R&D and “push” them onto the market. In the demand or market-oriented approach the customer demands and market dynamics are at the center of attention for innovation managers and not the technology development. The hybrid innovation approach attempts to combine this technology based approach with the demand or market oriented approach.

The “open-network” innovation approach (Ortt, 2006; Pullen et al., 2012) is seen as the state of the art innovation approach. The open innovation model proposes that companies commercialize external and internal ideas by developing outside and in-house pathways to the market. Various relevant stakeholders, such as customers or suppliers, are integrated into the innovation process and the approach is network-based rather than linear. The previous innovation approaches are often seen as “closed” because they do not involve actors from outside the company and therefore, do not bring external ideas or technology to the innovation process. Research by Chesborough et al. (2006) presented a new, open innovation paradigm for better understanding of the innovation processes in industrial networks. This new paradigm states that a much more externally focused perspective is needed. This new paradigm recognizes the actions of many different actors in a very distributed innovation field that had been previously recognized in the traditional innovation models (Chesborough et al., 2006).

The awareness that innovation processes require other skills, structures, processes and mindsets as the approaches used for managing regular business lead to the concept of the “ambidextrous” organization (O'Reilly and Tushman, 2004). This concept includes both the capability to achieve efficiency in the existing business (exploitation) and at the same time develop new products and markets (exploration). Managers in business struggle with this need to be ambidextrous and often one of these approaches will dominate. It appears that the existence of strong, shared values within the organization makes it easier for corporate staff departments to give more autonomy to divisions without losing control over them (Markides, 2008). These values can be recognized as specific characteristics of the organization.

A specific combination of context characteristics, cooperative characteristics and critical success factors for innovation at a company level are seen as necessary for successful innovation management in chains and networks (Omta, 2002, 2004). In this approach three related elements, namely the context, the cooperation characteristics and the critical success factors for innovation at company level are presented. This makes it possible to develop predictions on the potential success of innovations implemented in chains and networks. The combination of the three elements in this framework is an extension of existing models. These existing models define the general mechanism by which relationships between actors and the changes in supply networks can be explained. Often the starting points recognize two different aspects of the networks, namely the positioning of the firms in the structure of the supply network and the nature of the mutual relationships. The theoretical framework for research on innovation in chains and networks states that it
can predict the behavior of individual companies, given their context, structural position and social position in the network.

**Concluded** is that to understand the different strategies found in practice more insight in the innovation characteristics of the focal companies and its supply network should be added to the existing approaches found. Working on the improvements in the supply network implies the capability to cooperate with other disciplines, cultures and asks for transparency. When the characteristics of the focal company are mono-disciplinary and represent a closed culture they are frequently unable to facilitate these changes and choose a defensive strategy. This conclusion suggests that attention should not only be paid to the external, context, characteristics that explain why a strategy is developed but also to the internal and cooperation characteristics. Therefor more insight into the cooperative characteristics in the supply network and the critical success factors for innovation at company level is needed. These critical success factors for innovation at company level can also be defined as the innovation capacity or strength of the company and represent the capability to react.

### 2.5.3. A NEW FRAMEWORK CONCERNING THE IMPLEMENTATION OF SUSTAINABILITY IN SUPPLY NETWORKS

The challenge in understanding the implementation process of sustainability in complex global industrial supply networks is filling the gap that the current frameworks have left unaddressed. In the general supply network management literature, the capability of “focal” companies and their supply network to react to external pressure is increasingly analyzed for their innovation characteristics (Omta, 2002, 2004).

This innovation approach has rarely (Seman et. al., 2012; Pereira de Carvalho and Barbieri, 2012) been seen in the frameworks developed for the implementation of sustainability in supply networks. Based on the assumption that the implementation of sustainability in supply networks can be seen as a system innovation, the innovation characteristics together with the cooperative characteristics of its supply network have been included in a new framework. An important question that is addressed by this framework is: How capable is the focal company and its supply network to face the external pressure of stakeholders that want them to implement sustainability, and to which strategies and activities will it lead?

Figure 1 shows the newly developed framework illustrating the implementation process of sustainability in supply networks from the perspective of a “focal” company (van Bommel, 2011). In some situations the supply network contains more than one (multiple) “focal” company. The framework does not represent the supply network but the implementation process and therefore does not show more than one “focal” company. The framework shows the perspective from one “focal” company and when the supply networks contain multiple “focal” companies, the interaction between them and other actors in the supply network will become part of the cooperative characteristics in the supply network.
The figure suggests a linear process and thereby simplifies reality. Different short-cuts and loops will be found in practice. An example of one possible short-cut between the pressures and the activities and one possible loop between the activities/performance and the innovation power are shown in the framework and are explained below.

The answer to the question why the implementation should take place is influenced by existing pressures and incentives. Since the implementation process is considered to be a system-innovation, pressures and incentives jointly create the innovation-pressure, which starts the implementation process of sustainability in a chain and network. These pressures and incentives are: customer demands, response to stakeholders; competitive advantage; pressure groups, and reputation loss. The relevance of these pressures and incentives are closely related to the specific sector, product, service, and the supply network. The factors in this framework are seen as context characteristics. Not only is there pressure from the market and consumers, but also from new government policies like the Extended Producer Responsibility and Integrated Product Policy (Scheer and Rubik, 2006). The six forces extended “five forces model” (Rugman, 2000) also recognizes the societal pressure from government and NGO's as an important external pressure.

Research concerning the relation between sustainability and supply networks often focused primarily on the relationship between the external pressures and incentives with the strategies being developed. In this framework this relation is seen as a “short-cut”. It illustrates that in this situation the activities are forced by the pressure from outside without developing a strategy and therefore may not conform with the innovation characteristics of
the company and its network. This raises the questions: what will the performance outcome be and how long will these activities last? Implementing an ISO14001 management system in an organization that is not equipped to cope with one could be disastrous.

In this framework two new elements concerning the innovation characteristics of the focal company and the cooperation characteristics of the supply network have been included. They represent the important role that has recently been recognized in supply network dynamics literature for socialization, system innovation, experimental learning and cultural aspects (Cousins et. al., 2006; Hofstede, 2006). The importance of these approaches can also be found in the strategic purchasing and supply management streams of the theoretical framework of supply chain management research (Chen and Paulraj, 2004).

The first element focuses on, in addition to the more traditional general characteristics as size and power, the innovation characteristics of the “focal” company. The second element includes the cooperative characteristics of the supply network. Together these two elements represent the important role that has recently been recognized in supply network dynamics literature for socialization, system innovation, experimental learning and cultural aspects (Cousins et. al., 2006; Hofstede, 2006). The importance of these approaches can also be found in the strategic purchasing and supply management streams of the theoretical framework of supply chain management research (Chen and Paulraj, 2004).

The interrelation of the pressures and incentives, innovation characteristics of the “focal” company, and cooperative characteristics of the supply network form together a strategy for the implementation of sustainability in the supply network can be understood.

While the resign strategy ceases activity, both the defensive and offensive strategy will lead to a range of activities. The activities used to implement sustainability in supply networks often prove to be adopted from other related topics like quality, safety, logistics, etc. The need to manage these other aspects throughout the supply chain has been already acknowledged for decades, providing us with useful examples. Looking at sustainability in a broader sense means that areas not (directly) related to the product itself must also be considered. These topics cannot be measured, checked or controlled by considering the product itself. For example, the product does not inherently indicate if it was produced using sustainable energy, or child labor, etc. To be able to include these aspects into the existing

22
supply chain management approaches, they have to be “widened”. Because these aspects sometimes occur in parts of the supply chain that are not relevant from a “pure” economic perspective, the approaches also need “lengthening”.

Sustainability activities can be classified into two categories: ‘product’ related and ‘organization’ related activities. Well-known examples of a ‘product’-related approach are the product labels concerning a specific sustainability aspect. These labels demand that specific conditions be fulfilled in the supply network of the product. Labels often focus on a single aspect (fair trade, ecological, etc.) or a single material part of the product (organic cotton). They often do not include all the phases of the supply network. Many labels focus on the production of the material/product and do not include the processing and the distribution. Labels for social aspects like child labor and working conditions are rarely used. The debate on the integration of labels that indicate more than one sustainable aspect, is ongoing. However, in practice, most of the activities are not recognized.

“Organization”-related activities employ management systems to ensure that the specific sustainability aspects are managed properly in the organization. Focal companies use these systems in their own organization and are demanding the same activities from partners in their supply network at an increasing rate. A well-known and wide-spread example is ISO14001 (Nawrocka et. al., 2009) concerning the environmental aspects. A less known example is SA8000 concerning social aspects (Stigzelius and Mark-Herbert, 2009). These activities could be part of both strategies but may differ from each other on aim and impact.

A defensive strategy allows the supplier evaluation to dominate, while the offensive strategy allows supplier development and cooperation to develop new sustainable products and services together with the focal company. The offensive and defensive strategies initially result in highly diverse activities. However, the (defensive) evaluation of suppliers can develop towards (a more offensive) cooperation in the future, and, therefore, the two strategies can actually converge, resulting in little difference in the long run. The introduction of an environmental management system (ISO14001) could be approached from a risk management perspective. However, the management system can (and, according to the standard, should) also be used for the development of sustainable products by “continuous improvement”. These examples show that classifying activities as being “defensive” or “offensive” is not always possible. Some activities can be classified as being primarily “defensive” or primarily “offensive” and others can be both, often depending on the phase of implementation. These activities could be called “hybrid”. There is a loop in the framework from the activities (and performance) back to the innovation characteristics of the focal company and the cooperative characteristics of its network. This loop demonstrates that activities will lead to experiences in the “focal” company and its network and therefore these characteristics can evolve over time.

Measuring the performance of sustainability activities is not easy. How can one determine the level of implementation of sustainability in the supply network? Results are often based on plans and activities and not in terms of the reduction of waste or overtime hours in the supply network. The level of implementation and certification of a management system can be measured but how do these measurements relate to the improvement of environmental and social aspects? Models found in literature (Sarkis, 2003; Zhu et. al., 2008) measure the implementation of “green” supply chain management practices and do not identify sustainability performance outcomes. Different approaches found show ongoing problems of
scope and terminology, lack of a broad sustainability focus because of complexity and the need for transdisciplinary teams (Schaltegger and Burritt, 2014). Also, the Global Reporting Initiative recognized this and established a working group focusing on supply chain reporting. This working group has developed specific supply chain disclosures that have been integrated in the latest Global Reporting Initiative G4 Guidelines (Global Reporting Initiative, 2014). How to measure the performance has not been worked out in this framework.

2.5.4. INNOVATION CHARACTERISTICS OF A FOCAL COMPANY AND ITS SUPPLY NETWORK RELATED TO THE SUSTAINABILITY STRATEGIES AND ACTIVITIES FOUND

The framework presented in 2.5.3 introduces the “innovation capacity” as a new element and states that the level of this capacity will be related to the selected strategy and activities found. Strategies will often not be explicit and can differ within one company between different products and sustainability aspects. Therefore the framework suggests that activities can be classified and that the specific configurations of activities will represent a certain (often implicit) strategy. The conceptual framework shows that the capability to react to pressure will be determined by the innovation characteristics of the “focal” company and the cooperation characteristics of the supply network (Omta, 2002, 2004). It also shows that the “focal” company’s choice of strategy is influenced by the innovation management approaches (Gracht et. al., 2010) found in the “focal” company and its supply network.

Assumed is that focal companies that feel the pressure to implement sustainability in their supply network will choose a defensive (risk-based) strategy and related activities when the innovation characteristics and innovation management approaches found in the focal company and its supply network show a low innovation capacity. Focal companies with a low level of innovation capacity will often choose a risk-based strategy because they lack the capability to implement the strategy for the development of sustainable products. Low innovation capacity is characterized by technology-based and demand-oriented innovation management approaches (Gracht et. al., 2010). When these focal companies have no innovation capacity at all (or very low), focal companies will have to choose the resign-strategy because they will not be able to implement the risk-based strategy.

This leads to the conclusion that focal companies that feel pressure to implement sustainability in their supply network can only choose an offensive (development of sustainable products) strategy and related activities when the innovation characteristics and innovation management approaches found in the focal company and its supply network represent a certain high level of innovation strength.

These focal companies require this higher level of innovation capacity to be able to develop an offensive strategy towards the development of sustainable products. This higher level can also be characterized by the hybrid and open network innovation approaches (Gracht et. al., 2010). These focal companies can and will often choose an ambivalent or ambidextrous strategy. For specific products, they might experiment with the development of sustainable products while, at the same time, they employ the risk-based strategy for their main stream products.

The proposed framework specifies the factors that determine the level of innovation capacity based on the components mentioned in literature to build an innovative organization (Tidd and Bessant, 2009). These seven components are: vision and leadership; appropriate
structure; key individuals; effective team working; high involvement innovation; creative climate and external focus. Also, other approaches for characterizing the innovation capacity of a “focal” company have been selected from literature and a methodology for conducting internal innovation-analyses of companies (Rogers, 1995; Armbruster, 2008) and the excellence model of the European Foundation of Quality Management (EFQM, 2010) have been used.

The following six factors were selected: “external orientation and transparency”, “cooperation”, “learning and adapting”, “leadership”, “autonomy and possibility for experimenting” and “result driven”. These six factors include many aspects that have been mentioned in previously discussed approaches and frameworks for analyzing supply network dynamics. However, until this point, these approaches were rarely found in frameworks concerning the implementation of “sustainability” in supply networks. By adding these aspects to the framework the defined gaps in existing frameworks are reduced.

In section 3.3 more background information on these six factors and also how they have been made operational in statements to measure the innovation strength in focal companies is explained. These statements were used for the first quantitative part of the empirical research (survey) and the results are presented and analyzed in chapter five.

2.6. THE DECISION MAKING PROCESS FOR DEVELOPING A SUSTAINABILITY STRATEGY

2.6.1. INTRODUCTION

While the framework presented in section 2.5 may explain why strategies differ between organizations, it does not tell how these strategies are being developed and implemented. More insights into the decision-making process is therefore necessary.

The process of decision making in between and within organizations and its supply networks is a specific field within the policy and management sciences. Many frameworks and models have been developed, are being presented and used for analyzing decision making processes and using the insight to support the improvement of these processes. Although the innovation characteristics mentioned in section 2.5 overlap with the factors influencing the decision making processes (Tidd and Bessant, 2013) they are presented in this section as separate approaches. In the empirical research both approaches have been used to analyze the implementation process of sustainability in supply networks.

Based on a literature review some decision support models are summarized in section 2.6.2 and relevant aspects and actors have been selected for analyzing and reconstructing the decision making process concerning the sustainability strategy in the four business-cases selected (2.6.3). These selected aspects and actors have been used to develop the case-study protocol that is explained in chapter three and six and can be found in appendix V.

2.6.2. APPROACHES TO UNDERSTAND DECISION MAKING PROCESSES

Decision making processes in organizations are part of the integral management processes within the entire organization. The five phases that are recognized in classical models for rational decision making processes are (Simon, 1979);
Identification of the problem/issue
Setting importance/priority
Developing possible strategies/activities
Weighing the alternatives (feasibility, costs versus benefits etc.)
Selecting a strategy/activity

The management process then continues with implementation, monitoring the results and checking if the targets are being met. When the targets are not met the implementation of the strategy/activity needs improvement, another strategy/activity should be selected or the targets should be replaced by less ambitious targets because they are unachievable. This “plan/do/check/act” management process is cyclic, is never finished and will drive for continuous improvement (Zangwill and Kantor, 1998).

Recognized is that these rational approaches do not include the factors and the interaction between the involved actors that influence the decisions made within the various phases. Many different approaches to understand decision making processes in between and within organizations have been developed and published in literature. The approaches can in general be divided in two categories. The quantitative mathematical approaches versus the qualitative process oriented approaches (Wu, 2011). The mathematical approaches use rational quantitative decision making models. They rely on facts, calculations of risks and opportunities and logic reasoning. Methods such as cost-benefit analysis give financial numeric values to the different aspects and strategies can be selected based on the results of the calculations (Boardman et. al., 2014). These mathematical approaches have also been developed for sustainability and environmental strategy development.

A mathematical supporting tool has also been produced within the field of environmental science to support decisions about reducing the environmental impact of a product during its entire life cycle. The methodology is called Life Cycle Assessment; LCA (Bribian et. al., 2011) and is standardized in the ISO 14040 (ISO, 2010).

To support strategic decisions within the Corporate Social Responsibility (CSR) policies several measurement models have been developed (Weber, 2008). These approaches cannot include all relevant factors in complex situations and they rely heavily on detailed information concerning the selected factors. This is often impossible. For this reason these methods select the most relevant factors and do not explicitly include the role of the different actors involved. Therefore, they focus extensively on the technical and economic aspects and often do not include the social and process oriented aspects. In fact, these methods do not cover the entire decision making process but are used as rational supporting tools in different phases largely for the technical and economic aspects.

Some approaches include the opinion of experts in semi quantitative methods. Based on an extensive revision of the analytical hierarchy process decision making model (Saaty, 1990) the Multi Criteria Hierarchical Model (MCHM) was developed and tested for incorporating sustainability in decision-making for medical device development (Hede et. al., 2013). The model was developed specific for decision making during the process of product development and it distinguishes criteria at three levels. The criteria at the first level (tier) are defined as the non-negotiable “criteria”. They are considered sufficient to develop a product with a tolerable level of sustainability throughout the product life cycle. The criteria in the second and third levels (tiers) are desired criteria for developing a more sustainable product.
Because these second and third level criteria are much more difficult or impossible to quantify they are subject to expert opinion. For example, an expert could prioritize end-of-life (recycling) options of the product over employment or joining social programs (community welfare). Recognized is that a variety of geographical locations and socio-economic circumstances influence these choices greatly.

The process oriented approaches use qualitative methods to describe, analyze and sometimes influence and support the decision making process. They qualitatively determine the relevant factors that influence the decisions made in the different phases of the process. They differ from the quantitative methods by also focusing on the actors and the interactions between them in the decision making process. These approaches are used when reliable, quantitative, information on the factors is not (or hardly) available and the relation between all the factors and actors is very complex. Because of this complexity some argue that decision making in these situations should be considered taking place in complex and adaptive systems (Choi et. al., 2001). In such systems with high uncertainty and absence of complete and reliable information, organizations seem to adapt a set of simple rules for the decision making process. These rules are then based on the decision maker’s interpretation of the organizations norms and values and the limited information that “is” available (Frenken, 2001).

The process oriented approaches include the factors and the actors. However, just like the mathematical approaches they have to select the most relevant factors and therefore simplify the often very complex decision making processes. The decision making processes in this research focuses on the sustainability aspects. They are often recognized as moral or ethical aspects. For this reason, understanding behavioral ethics in organizations (De Cremer et. al., 2010) may be very relevant. Ethical issues include intensity, opportunity, organizational factors, and individual factors influencing the decision making process. The ethical issue intensity can be defined as the importance of the issue in the eyes of the people involved. The opportunity relates to the individual context of “what is in it for me”. Ferrell and Fraedrich (2009) state that the organization’s values (factors) have greater influence on decisions than a person’s own values. This so-called corporate culture is known as a set of norms, values and ways of solving problems that employees of an organization share. The individual factors include moral philosophies and values and include the role of authentic leadership (Cianci et. al., 2014).

An example of a decision support model for understanding and influencing the restructuring process of industrial sites (Bugge, 2013) integrates different participant groups (actors) in the process. The groups determined in this model were business, project developers, local governments, planning agencies, NGO’s etc. The model states that decisions are influenced by the combination of relevant and reliable information, access to resources and the motivation of the participants involved.

To develop this model the `Contextual Interaction Theory´ (De Boer and Bressers, 2011) was used. The contextual interaction theory acknowledges that not only the external pressure but the strategic behavior of the involved actors influence the decision making process. As presented in the model, the three main variables for the behavior of the actors that are recognized are their motives, their resources and their cognitions or information. A simple model in figure 2 of the interaction process shows the input on one side, the output
on the other side and the arena in between. In the arena the different actors interact with each other.

![Figure 2: Model of the interaction process used in the Contextual Interaction Theory (Bressers 2009 and De Boer and Bressers 2011)](image)

The interaction process is based on the three main characteristics of the actors. The motives, the resources and the cognition. The ‘motives’ drive the action, the ‘resources’ provide capacity and power and the ‘cognition’ is the information that is being held as the truth and used to interpreted the situation. These three characteristics are not isolated but are interconnected and influence each other. The complex interactive relationships are shown in figure 3. This figure shows the changes of the processes relationship between the three characteristics. The three characteristics themselves are also elaborated on.

![Figure 3: Dynamic interaction between the key actor characteristics that drive social interaction processes and in turn are reshaped by the process (Bressers, 2009)](image)

2.6.3. DECISION SUPPORT MODELS FOR UNDERSTANDING SUSTAINABILITY STRATEGIES

Decision making processes within organizations may follow a different path than the decision making processes of another organizations but the models and frameworks found often cover the various perspectives. Within an organization the different departments/functions/persons in that organization become the actors/participants involved instead of the different organizations.

The five phases often recognized in many classical models are for rational decision making processes and are generally found to be suitable as a heuristic method to describe the
situation. The processes however, do not always follow these five phases in a linear line. Instead they can and do interact with each other, sometimes going back with a cyclic loop to a phase earlier in the model.

A mathematical approach often proves unusable. The complexity of the decision making process concerning sustainability strategies in the supply network and the lack of reliable data for calculating costs and benefits of the strategic sustainability decisions are beyond its capability.

Therefore a process approach focusing on the internal factors and actors concerning the decisions that are being made for the sustainability aspects is seen as the most suitable approach.

The different elements of the contextual interaction theory from the perspective of sustainability and the clothing sector illustrate this. The internal actors within the organization of the focal companies are: CEO and management, sales and marketing, production, procurement, sustainability and CSR. The three characteristics cover all the relevant factors mentioned in literature concerning strategic decision making processes for sustainability in the supply network. To illustrate this, these factors are connected with the three characteristics from the contextual interaction theory below.

Within this theory the first characteristic of motives or “motivation” contains the driving forces for the actor analyzed in the decision making process. The external pressure from society for developing a sustainability strategy and joining sustainability activities is (very) high but for all the cases relatively similar. In fact, this “motivation” characteristic represents the interpretation of the organization of the societal debates and the relevance of the existing external pressure for their business. Important elements of this characteristic motivation are the “intensity and importance” felt by the analyzed social and/or environmental aspects, the “motivation” and the “opportunity” to act.

As can be seen in figure 5 the “motivation” can, by a focus on a specific aspect, influence the “cognition” in a way that the search for and the interpretation of information is guided by a motivation factor. An example illustrating this is the accident in a Bangladesh garment factory in 2013. This accident strongly increased the motivation and indirectly influenced the need for information on the aspects and activities being part of the cognition characteristic. The motivation characteristic can and will often influence the power characteristic because when the motivation asks for action the necessary resources and power to create the action will, if possible, be created. To illustrate this relation between motivation and power, the increasing motivation to develop clothes based on recycled materials will need resources to develop pilot projects. These resources will be the traditional resources as money and time but also specific characteristics of the organization to make these innovations successful.

The second characteristic “cognitions” is about information available for the actor concerning specific social and environmental aspects. But also information about possible activities that could be joined to improve these aspects and the feasibility of joining these activities can be part of this characteristic. As the word cognition is defined, it is not only about the objective information but also very much about the interpretation of the information from the perspective of the actors position. As can be seen in figure 5 the “perception” of opportunities and threats can influence the “motivation” characteristic from the “cognition”
characteristic. For example, a cleaner production program in the sector is searching for companies to participate. The motivation characteristic will be influenced when this program is seen as an interesting opportunity to be a part of. As mentioned above, the “power” characteristic can be influenced by the motivation characteristic. The cognition characteristic can also directly influence the “power” characteristic when the information concerning aspects/activities indicates a high strategic value.

The third characteristic “resources” or “capacity and power” contains the power in the sector and the supply network to implement a certain activity. Power is often defined as being big in turnover and the number of employees, but also the number of suppliers and the % they produce for this specific company are very relevant power factors. As can be seen in figure 5 the “power” characteristic can influence both the “motivation” by the availability of resources for action and the “cognition” by the availability of resources for data collection and processing. The fact that fashion and clothing companies with a certain level of power have special departments and functions for sustainability aspects, illustrates these relations. These departments can and do have the possibility to gather process relevant information and facilitate sustainability actions.

Section 3.4 explains how the model has been used in the description and the analysis of the four cases selected in the second phase of the empirical research.
CHAPTER 3. RESEARCH STRATEGY

3.1. INTRODUCTION

The research conducted to answer the primary research question formulated in chapter 1 consisted of three different phases. The aim was to explore the implementation process of sustainability in supply networks. The first phase consisted of a literature review. This literature review set out to explore the existing insights found in research about this implementation process. This part focused on the question "which existing approaches have been developed for understanding the implementation process?" and "which elements could be improved or added?" How this literature review was conducted and its results was explained in chapter 2. Concluded was that it would be worthwhile to include an innovation approach to the existing frameworks found and to glean further insight into the decision making process within the focal company’s organisation concerning sustainability. In response to the first aspect a new framework was developed to include the innovation characteristics of the focal company. The second aspect was addressed by selecting a decision support model. The new innovation elements in the framework and the selected decision support model were used to conduct the empirical research in a specific sector. The empirical research contained two different phases including a quantitative survey and qualitative case studies. In the quantitative survey the innovation characteristics in the new framework were used. The relation between sustainability strategies and activities was analysed. The quantitative survey conducted is further explained in section 3.3. The qualitative case studies concerning the decision support model were used to gain more insight into the decision making process in the selected cases. The case study research conducted is explained in section 3.4.

3.2. THE SELECTION OF THE CLOTHING SECTOR

As previously mentioned, the empirical research was conducted within a specific sector. In this sector the "external" pressures and incentives are consistent throughout the industry, allowing the empirical research to focus on the "internal" innovation characteristics. The sector needed to meet certain criteria to be suitable for answering the main research question. Firstly it needed to be an international (global) industrial network facing many different sustainability (social and environmental) aspects. Different activities to improve these aspects needed to be in place for some time in order for evaluation to be possible. Also the information about participation in these activities should have a certain quality level so it could be gathered reliable from the companies. The final criteria was the access to the information needed and the expected cooperation of companies participation in the survey and interviews conducted as part of the case study research. Both the clothing sector as well as the consumer-electronics sector meet the first criterion. They are both international (global) industrial networks and they both face many issues relating to sustainability. Preliminary research showed that in the clothing sector more sustainability activities were found. However, they did differ in the amount of sustainability activities in place the cooperation of the Dutch sector organization MODINT was also a deciding factor. They agreed to give access to relevant data, facilitated the survey process and were willing to stimulate their members (being clothing companies) to participate in the survey and cooperate in the case studies. More detailed information about the relation of the clothing industry to sustainability aspects and the initiatives found in the sector to improve them are described in chapter 4.
3.3. THE QUANTITATIVE SURVEY

3.3.1. INTRODUCTION

The relationship between the innovation characteristics of the "focal" company and its supply network to the implementation strategy for sustainability was an essential element of empirical research. Research on supply chains and network dynamics is complicated. Many different actors in the supply chains and networks are involved. Some researchers analyse the dynamics in the supply chains and networks with a multi actor approach and focus on the interactions between the different partners. Another, well known approach is to look at the supply networks dynamics from the perspective of a so called focal company (Chen and Paulraj, 2004). The focal company is defined as an actor in the supply network with a strong and strategic position in the network that can influence the processes creating the dynamics. In this research, this second approach was selected. This approach to gives more insight in the different sustainability strategies of individual "focal" companies in their supply network. Although the focal company approach in research for analyzing the implementation of sustainability in supply networks is sometimes discussed (Frostenson and Prenkert, 2014) studies often do use this focal company approach. An important reason is that the suggested network perspective is too complex for operational research activities. Also, the insights based on the focal company approach produce great insight into the dynamics of the other actors in the supply chain and networks.

To describe and analyse the innovation characteristics and management approaches of the focal company and the supply network, an operational method for the on-line questionnaire was developed and conducted in 2010. Also, inquiries were made into the participation in sustainability activities, the influencing factors and the innovation characteristics.

A group of 91 "focal" companies in the clothing sector was selected in cooperation with the Dutch sector organisation for fashion and clothing industry, MODINT. These companies had voluntarily participated in a "sustainability" project of MODINT before and were, for this reason, seen as front-runners on sustainability. These front-runners were selected for the survey because they all joined several sustainability activities. This participation made analysis concerning the relation of these activities with the innovation characteristics possible.

The companies were sent an on-line questionnaire by email using Parantion Web Survey application. After 30 days a reminder email was send to the companies that did not respond to ask them for cooperation.

3.3.2. THE QUESTIONS ASKED

The questionnaire contained four parts. These parts were called “general questions”; “innovation characteristics”; “influencing factors”; “sustainability strategy and activities”. The questions asked are explained below and they can be found in appendix IV.

In the first part the general questions asked for the turnover in 2008, the number of employees in the Netherlands, the country where the head-office is situated and the business model that best characterizes the company. The respondent could choose between seven business models presented. The models differ on how the company owns the four main phases (design, production, distribution and retail) of the supply network. The business models are explained in more detail in chapter 4.

The second part of the questionnaire focussed on the innovation characteristics. To test the relation between the “innovation capacity” and the participation in sustainability activities the level of the “innovation characteristics” of the company were measured. Based on the six categories thirty statements were formulated and the respondent was asked to what extend (a five-point scale from fully agree to fully disagree) the statement formulated their perception of the company. The individual respondent was asked to answer from a corporate perspective rather than personal opinion. This would have caused a bias in the results.
because their personal opinion of and experiences in the organization would have
influenced the scores given. Respondents were informed that results would be collected and
analyzed anonymously there by reducing the influence of personal experience on scores to
low. Section 3.3.3. explains in more detail how the six categories were defined and the thirty
statements were formulated.

The third part of the questionnaire concerned the factors that influence the selected
sustainability strategy and activities of the focal company. The respondent was asked to give
a score to what extend they thought the factor mentioned influenced the decision of the
company to consider sustainability in the supply network. The scores could vary from “no”
influence to “very much” influence on a five point scale. The respondent was asked to give
scores for environmental aspects and in a separate question also for the social aspects. The
eleven influencing factors that were put forward were selected from literature and can be
found in appendix II.

In the fourth part of the questionnaire the respondent was questions asked about their
sustainability strategy and activities. As mentioned in chapter 2 strategies have shown to be
often very implicit and therefore very difficult to measure. That is why the focus was put on
the measurement of the activities rather than the strategies themselves. However, in order
to get some insight in how companies define their own strategy the respondent was asked to
formulate the sustainability strategy of the company in their own words.

After that the respondents were asked to answer questions concerning their acquaintance
with and participation in sustainability activities in their supply network. Eleven sustainability
activities used in the clothing sector were selected and the content of these activities is
described in more detail in chapter 4. The eleven activities contain six environmental
activities, three social activities, one fair trade activity and one programme that incorporated
both social and environmental activities. The six environmental activities contained four
related to the product or material and two related to organizational aspects. The three social
activities all related to organizational aspects and were not directly linked to the product.

Appendix III shows the names and logos of the eleven activities that have been selected.
The respondent was asked for every selected activity if the organization knew the activity. If
yes, if they were joining or might be joining the next years or would not consider joining at all.
The answers lead to a five point scale showing the level of acquaintance with and
participation in each activity. To check the liability of the answers concerning the participation in sustainability activities, public information like websites and annual reports from the respondents were analyzed and compared with the answers given in the survey. in
addition to the separate scores given to each activity, aggregated scores were developed
for the social, environmental and all sustainability activities.

3.3.3. MEASURING INNOVATION CHARACTERISTICS

Based on the various innovation approaches and theories explained in chapter 2 six
categories of innovation characteristics were defined (Rogers, 1995; Armbruster et. al.,
2008; EFQM, 2010). The six categories are: “external orientation”; “cooperation”; “learning”;
“leadership”; “autonomy” and “result-driven”. The background and content of these six
categories and how the corresponding five statements were developed in order to measure
them is explained in the following. The thirty statements used in the questionnaire can be
found in appendix I.

The first factor is “External orientation and transparency”. This factor states that an important
characteristic of an innovative company is that it is actively searching for interaction with the
world outside the company. The organization is open about what goes wrong and what could
be improved. This factor is about if and how the organization has insight in the developments
and trends in their sector; if the employees of the organization have direct contact with

33
clients, supplies and partners; and if the organization wishes to actively present itself in and around the sector in debates, media and conferences. Also part of this first factor is if the organization compares itself with others concerning function and performance and if the organization dares to address sensitive topics in the sector.

The second factor “Cooperation” states that innovative companies will search for cooperation to find solutions with others in- and outside the company. This factor is about cooperation between different departments and disciplines within the organization and working regularly together on common goals. Also, if the organization has knowledge concerning the goals and function of the partners in the supply network and if the future policy of the organization is or will be developed in cooperation with these partners in the supply network is part of this second factor. Finally, the level of trust among the organization and the partners in the supply area is also part of this factor. This factor represents a gap (mentioned in chapter two) in the existing frameworks; the capability and experience to develop interdisciplinary and cross-functional cooperation in relation to the nature of interorganizational relations between the “focal” company and its suppliers.

The third factor “Learning and adapting” concerns the capability to learn and incorporate ideas for improvement. It is about if mistakes are seen as learning moments, if they are made visible and used to develop structural improvements and if the organization has really implemented the “plan, do, check act” circle. This factor also includes if education and training are used to increase the autonomy of the employees and to strengthen the bilateral communication skills and if taking initiative and showing flexibility belong to the most important criteria by recruitment and the development of employees. Also, if the organization participates in pilot-projects concerning new methods for assessing processes and products is part of this factor. This factor represents the aspect mentioned in chapter two as a gap in the existing frameworks; the capacity of an organization to learn about the business-natural environment and to manage this knowledge.

The fourth factor “Leadership” focuses on if leaders dare to take risks. It concerns whether or not the organizations leaders inspire and motivate employees by setting a good example and if they protect employees and reduce unnecessary bureaucracy and overhead. Also included in this factor is if management develops the learning capacity of the organization and reserves means in the budget to support this. If the management bases the success of the organization not only on the company goals but also on the added value to society by the organization is also an element in this “leadership” factor.

The fifth factor “Autonomy and the possibility for experimenting” is seen as an important factor for an innovative company based on trust and expertise. It is about whether or not employees are being treated as internal partner, if the organization provides the opportunities for unconventional methods for cooperation and development, and if means and time are available for innovation. It also addresses if unnecessary rules and juridical barriers are reduced or removed and if the organization has a relative horizontal organizational structure is part of this fifth factor.

The sixth and last factor “Result driven” is important because innovation is not an aim in itself but should lead to results. Included in this factor is if the organization shows accountability about the results, priorities and learned effects of improvement projects and if employees clearly contribute to the organizations goals in the long term. Also, if the organization involves by the assessment of the results the added value for the network partners and if the organization judges their results in relation to the front runners in the sector are part of this factor. And finally, if the organization uses good operating practical examples from other organizations and future scenarios to determine the effectiveness of improvements for the long term.
3.3.4. RESULTS AND ANALYSIS
Forty four out of the ninety one companies participated in the survey and replied the questionnaire. Twenty nine companies answered all questions.

The descriptive answers given to the general questions in part 1 of the questionnaire concerning the turnover, number of employees in the Netherlands, the country where their head-office is situated, and the business model that represents their company best, are presented in section 4.5. The results of the answers given to the questions in part 2, 3 and 4 in the questionnaire and the analysis are all presented in chapter 5.

In section 5.2. the answers given to the questions in part 4 `sustainability strategy and activities` are presented and in section 5.3. the correlation of these answers with the general characteristics are analysed. The descriptions of the strategies indicated by the respondents can be found in appendix VI.

The scores given to the influencing factors, part 3 in the questionnaire, and the correlation of these results with the answers given to the questions in part 4 concerning the sustainability activities are described and analysed in section 5.4.

The scores given to the innovation characteristics and the results of the analysis of the correlation of these scores with the sustainability activities are presented in section 5.5.

Section 5.6. presents the results of the analysis of all the different factors involved.

3.4. THE QUALITATIVE CASE-STUDIES

3.4.1. INTRODUCTION
As previously mentioned, the first phase of the research focussed on the theoretical framework. Based on a literature review, a new conceptual framework was developed. In the second phase of the research, this framework was tested by a quantitative survey using an on-line questionnaire. The innovation characteristics of the focal company and its supply network showed to have significant correlation with the implementation of social activities in the supply network. The results of the survey revealed that this significant correlation was not found for the environmental activities.

However, the results of the survey conducted could not answer the questions how these strategies and activities for sustainability have been developed and how the decisions were made to participate in certain sustainability activities. Also, the difference found between the relationship of the innovation characteristics to the social and environmental strategies could not be explained. It was assumed that the decision making process for developing a strategy concerning the social aspects would be influenced by different factors and actors than the process concerning the environmental aspects.

For this reason, it was decided to use case-studies in the third phase of the research. The aim was to gain more insight into the decision making process concerning the selected sustainability strategies. To answer these questions a multiple case study approach was used. Case studies show to be the most appropriate research method (Yin, 2013; Dul and Hak, 2008) when there is limited control over the ongoing circumstances and the behaviour of the actors based on their characteristics cannot be influenced. Because analysing decision making processes for sustainability and strategies asks for a holistic view, a configurational approach was used (Neher, 2005; Samaddar et. al., 2006).

A literature review determined the relevant aspects for reconstructing and analysing the decision making process for the sustainability strategies and activities. The results of this
literature review and the selected Contextual Interaction Theory have been presented and explained in section 2.6. Also, the six categories of innovation characteristics presented in section 2.5 and used in the survey were again used for analysing the cases. Based on these results a semi structured case study protocol was developed (appendix V) containing the different elements for describing and analysing the cases selected.
In the description of the cases many social and environmental activities, programmes, guidelines and standards are included. Details and backgrounds about these activities are explained in chapter 4.

3.4.2. SELECTION OF THE CASES
The case study research is explorative and the four cases selected are front runners. They participate in sustainability practices well beyond legislation and contribute to several voluntary sustainability activities in their supply network.
The four selected cases are medium or large sized clothing "focal" companies. They all have a strategic position in their supply network that allows them to influence decisions concerning the sustainability strategy. However, they differ in the type of clothing produced, target group and organization structure. They also differ in their participation in the wide variety of sustainability activities in the sector.
The cases all have their headquarters in Europe. In section 6.2 more detailed characteristics of the four cases are presented.

3.4.3. COLLECTION OF DATA
For each case, information in publicly available annual reports, vision documents and strategic plans (often published on their websites) concerning sustainability and CSR from the company itself were analysed. Public information from non-governmental organizations, independent research institutes and, when possible, governmental agencies were also used. The historical development of the sustainability strategies was reconstructed using these data.
In addition to the public available data, semi structured interviews were conducted. During these interviews was checked if they did participate in the social and environmental activities found in the public information. And then based on these activities questions were asked in order to reconstruct the decision making process. Which actors were involved? Which factors played a role? and which alternatives had been considered? are examples of these questions.
The interviews were held with one or two persons representing the following functions within the company: CEO-Management; Sales-Marketing; Production; Procurement; Sustainability-CSR. These functions were selected because of their presumed influence on the decisions. The CEO is as general manager, responsible for all decisions including the sustainability strategies. The Sales-Marketing department has contact with the clients downstream in the supply network and they may ask questions or demands concerning sustainability aspects upstream. The Production often takes place in other (low- wages) countries. The department responsible for the outsourcing of the production has contact with these producing factories and knows what could be achieved concerning sustainability aspects upstream in the production phase. The Procurement officer is responsible for the procurement of all resources needed to produce the clothes and can integrate sustainability aspects in the procurement procedures. And the fifth function represents the sustainability-CSR staff member of the company. More and more companies have created a specific sustainability or CSR (part-time) function. The larger companies also have a special CSR department preparing and supporting the development and implementation of CSR strategies and activities.
It was frequently impossible to interview more than one person. The respondents were asked to explain the different roles of the functions in the decision making process related to sustainability strategies in their organization in detail.
As mentioned, the six categories of innovation characteristics presented in section 2.5 and used in the survey, were again used for the case-studies. During the interviews the same thirty statements, representing the six categories, were put forward and the person interviewed was asked to give scores representing the level of agreement with the statement from the perspective of the whole organization. The case study protocol containing and summarizing all the selected elements for describing and analysing the cases can be found in appendix V.

3.4.4. CASE-ANALYSIS

The analysis of the cases was done anonymously on request of the companies. The draft version of the description of the case based on the documents and the interview(s) was send to the contact person to check the information. Every case starts with describing their CSR organization and strategy. How the CSR tasks and functions have been integrated into their organization and the general CSR visions and strategies published in CSR reports and websites are briefly summarized and explained.

Secondly, the participation in social and environmental activities is summarized with special attention paid to the eleven activities selected for the empirical research and explained in chapter 4.

Thirdly, the decision making processes for some selected activities were described, reconstructed and analysed. To do this, the processes were analysed based on the factors of the Contextual interaction theory (CIT) as explained in chapter 2. The factors “motivation”, “cognition” and “power” from the perspective of different actors were analysed for important sustainability decisions that have been made in the organization. To make more detailed analysis possible, the three factors mentioned were specified into sub-factors.

Fourthly, the results of the scores given to the thirty statements concerning the innovation characteristics are presented and related to the decision making processes analysed. Based on these four elements, conclusions are drawn for every case concerning the relations found between the social and environmental activities, the different (sub) factors influencing the decision making processes and the innovation characteristics.

The results of these four case studies are presented separately in sections 6.3 to 6.6.

The results of these four cases studies have been compared using cross case analysis. These analysis were based on the same elements that were used for analysing the cases separately and the results are presented in section 6.7.

3.5. SUMMARY AND CONCLUSION

This chapter explained the research strategy used and the decisions that were made to conduct the empirical research. Section 3.2 explains the selection of the clothing sector because it is a well-known global “business to consumer” sector, faces many sustainability aspects and dilemma’s and many activities to improve these aspects are known. Chapter 4 describes the sustainability aspects and activities found in this sector in more detail.

The empirical research contained two different phases including a quantitative survey and qualitative case studies. As part of the quantitative survey the innovation characteristics of an organization, as presented in the framework in chapter 2, have been transferred into thirty statements that were put forward to the respondents. Section 3.3 explains how the transfer was conducted and how this became part of the survey. How the scores given to these statements were analysed and how they were related to the acquaintance with and participation in sustainability activities is also explained in this section.
For the qualitative case studies a decision support model (as explained in chapter 2) was used to get more insight in the decision making process in the selected cases. How the cases were selected, how the data was collected and analysed is explained in section 3.4. Before the analysis of the results of the survey (chapter 5) and the results of the case study analysis (chapter 6) can be presented, some general characteristics, sustainability aspects and activities in the clothing sector must be presented and explained in the next chapter 4.
CHAPTER 4. THE CLOTHING SECTOR AND SUSTAINABILITY

4.1. INTRODUCTION

The clothing sector was selected in this research in order to illustrate the strategies found for the implementation of sustainability in industrial supply networks. As explained in chapter 3, the clothing sector was selected because many different sustainability aspects are present in the supply network and many activities are found to improve these aspects.

To understand the position and economic values of the sector some general characteristics of the sector must be presented. This is done in 4.2.

Sustainability aspects are often categorized in environmental, social or prosperity aspects and are therefore explained in 4.3.

After the explanation of the aspects the various sustainability activities are explained and the eleven selected activities for the empirical research are presented in 4.4.

Finally, the descriptive characteristics of the respondents of the questionnaire as explained in chapter 3 are presented and analysed in 4.5.

4.2. THE INDUSTRIAL CLOTHING SECTOR

4.2.1. INTRODUCTION

The clothing sector has become an extremely complex global supply network in the last decades. Garment production is primarily located in Asia, while many consumers live in Europe and the United States. In addition, materials (fibers) are bought at the world market. Fashion and clothes have become a consumer product with a very high emotional and cultural value and fashion trends are changing rapidly (Wang et. al., 2012).

In the next paragraphs this sector will be characterized by presenting information about the size and turnover of the products in the sector, the phases in the production chain, the business models, the production countries, and the demand and production of fibers.

4.2.2. SIZE, TURNOVER AND EMPLOYMENT

The clothing and textile sector is an important part of the world economy. In 2000 the world’s consumers spent approximately 1 trillion US Dollars on clothing. Roughly one third in Western Europe, one third in North America and one quarter in Asia. Seven per cent of the total world exports are in clothing and textiles. Significant parts of the sector are dominated by developing countries, particularly in Asia, and above all China. The developing countries now account for half of the world textile exports and almost three quarters of the world clothing exports. However, some industrialised countries, like Germany, Italy, and the USA are still important exporters of textiles and clothing. For example, the USA remains the largest world exporter of cotton and Australia and New Zealand are the largest suppliers of wool and of carpets (Singhal et. al., 2004).

According to statistics of the United Nations Industrial Statistics Database (INDSTAT, 2015) in 2012 approximately 35 million people worked within the clothing (18 million) and textiles (17 million) sector worldwide. These figures include only the people employed in manufacturing, not retail and other supporting sectors. Around 70% of clothing workers are
women. In the garment industry, women typically sew, finish and pack clothes. Supervisors, machine operators and technicians are predominantly men and earn more money in these positions. Because of the size of the sector and the historical dependence of clothing manufacture on inexpensive labour, the clothing and textile industry has been subject to intense political interest and has been significantly shaped by international trading agreements (ILO, 2006).

4.2.3. THE PRODUCTION CHAIN AND THE BUSINESS MODELS
The production chain of clothing contains the phases as shown in figure 4. The different phases are explained briefly.

![Figure 4: The production chain of the clothing industry](author; van Bommel, 2016)

The design phase often takes place at the head office of the company in Europe or the USA based on new fashion trends and seasons. The traditional pattern of large batch manufacturing of clothing every half year (season switch) is rapidly changing based on customer demand (often called fast fashion). The stores now change design every few weeks. This asks for production at an increased level and has led to a concentration in the industry with fewer and larger suppliers (Wang et. al., 2012).

The fiber production phase is dominated by a world market of natural fibers. Section 4.2.5 will explain the different fibers used and the demand and production of these fibers in more detail.

The manufacturing of textiles and clothes begins with spinning the original fibers, short and thin, into yams. These yams are converted into fabrics by weaving or knitting. These processes are made very efficient and fast through the use of spinning, weaving and knitting machines.

The dyeing process is a chemical process requiring the use of many chemicals to give the fabrics the correct colors of the season. Chemicals are also used to treat textiles for fire protection (flammability) or to make the textile water repellent (Darbra et. al., 2012).

The production phase of the clothes, often called the garment industry, is very labor intensive. Even today, technical substitutions for the human hands are not available to work and sew every sort of required fabric. For this reason this phase of the production chain is predominantly situated in countries known for inexpensive labour (Hale and Wills, 2011). In section 4.2.4 the countries involved are explained in more detail.
After the clothes have been produced they will be distributed to the shops and sold to the consumers. The distribution from Asia to Europe or the USA takes place by containers on ships and from the harbours by trucks to the distribution centres and shops (Eryuruk et. al., 2011).

After the consumer has used the clothes for some time they will be disposed of and end up in a landfill, an incinerator, sold second handed (re-use) or the material may be recycled (van Bommel, 2014). Section 4.3.2 will explain more about the disposal phase of clothing.

The clothing companies rarely cover all the phases of the production chain. Often they participate in a select few of these phases and outsource the other. Seven business models for the clothing companies are distinguished in the figure below. It further illustrates the relation between these seven models and four phases of the production chain. In figure 5 (ING Economic Agency, 2009) the separate production phases in figure 4 are combined into one production phase and selling is defined as a separate phase called “retail”. As can be seen, the “use” and “disposal” phase are not included in this figure.

<table>
<thead>
<tr>
<th>Design</th>
<th>Production</th>
<th>Distribution</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column-company</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head-tail company</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private label</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subcontractor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network company</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail company</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 5: Relation of the production chain phases and the business models for the fashion and clothing sector (adapted from ING Economic Agency, 2009)

The only business model covering all the phases of the production chain is called the “column”-company. Only a few of these companies can be found in the market. Most clothing-companies are “head-tail”, “private-label” or a “brand”. A commonality of these three business models is that they outsource the production principally to countries with low labour costs. The “subcontractor” is the company that produces the clothes and as mentioned before they are largely situated in Asia. The “network” company is an international distribution and logistics firm that often distributes clothes also other products. The “retail” company is the company that sells the clothes in (web) shops.

Because the disposal phase receives increasing amounts of attention from the environmental and recycling perspective of the textiles (see also 4.3.2) new business models (Jonker and Dentrech, 2013) are being developed in order to incorporate this phase and close the material loop. Companies have started various schemes for taking back the clothes using refund-systems or lease-concepts as used by the Dutch company MUD Jeans (Armstrong et. al., 2015).

These new models are seen as the new business models for sustainable fashion and are part of the debate and the development of the so-called circular economy (Boons, 2013; MacArthur, 2013; van Bommel, 2014).
4.2.4. PRODUCTION COUNTRIES

In the last 10 to 15 years, employment in the clothing sector has increasingly been concentrated in China, Pakistan, Bangladesh, India, Mexico, Romania, Cambodia and Turkey. In many small developing countries, being small exporters on a global scale, clothing and textiles exports show to be a dominant form of external earnings. For example, in Bangladesh, Haiti and Cambodia, clothing and textiles account for more than 80% of the total exports. Wage rates in India, Sri Lanka and Pakistan have recently dipped below those of China. However, China continues to dominate the sector because of a build-up of competitive advantages like short lead times, efficient logistics, experienced and skilled labour, better power infrastructure and a higher investment in capital equipment. India is the second largest exporter of textiles but the textile machinery in India requires much modernisation to effectively compete with China (Fernandez-Stark et al., 2011).

Despite the dominance of the Asian countries approximately six million people are employed in the clothing industry in the European and Mediterranean area. This stems from a change in the development of new business models for clothing supply based on rapid response to changes in fashion with clothing sources near in proximity to the location of purchase. This has the potential to lead to an increase in clothing production in economically poorer European countries over the next decades (Allwood, 2006).

Also, production could potentially move to African countries. Some production took place in Ethiopia in 2013. However, until now this has only occurred with support from European countries as part of their policies concerning stimulating economic development in developing countries (Mo, 2015).

4.2.5. FIBERS USED

The fibers used for textiles and clothes can be categorised into two kinds, natural (cotton, silk, wool) and man-made (cellulosic, viscose, polyester, acrylic and nylon) fibers. Natural fibers originate from agricultural crops or domestic animals. Man-made fibers are produced using oil as resource for the synthetic materials. Between 1990 and 2004 the demand on the world market for natural fibers has remained relatively consistent while the demand for man-made fibers has nearly doubled. The natural fiber used most is cotton. Since 2009 the average price of cotton on the world market has doubled. The price of the man-made fibers in the same time frame has increased 50%.

An increasing demand for cotton over the next decades is expected as a result of the demand for cotton based clothes and textiles by the growing middle class in emerging countries. Some predict a “fiber-crisis” in the world market because of increasing demand and rising prices (FAO, 2013).

This possible situation has resulted in a surge in activities focused on the development of technology and "take back" systems for clothes to make the recycling of fibers possible. Fiber recycling may be a very rational solution for the predicted shortage and the high prices of virgin fibers in the near future.
4.3. SUSTAINABILITY ASPECTS OF THE CLOTHING SECTOR

4.3.1. INTRODUCTION
Supply chains of clothing have become global networks. Therefore, the related sustainability aspects are situated in many different countries all over the world. Sustainability aspects of the sector have gotten much attention in society, the public debate, by NGO’s and from researchers over the last 15 to 20 years (Joy et al., 2012).

The accident in the spring of 2013 in a textile factory in Bangladesh again raised the international awareness and led to public indignation concerning the labour conditions in the garment industry in Asian countries (Yardley, 2013).

At universities in fashion and textile curricula increasing attention is paid to sustainability aspects of the sector and the sustainable fashion (“slow” fashion) movement is growing (Fletcher, 2008).

The sustainability aspects are often being explained as the environmental, social and prosperity aspects. Even though the different sustainability aspects are interconnected they will be explained in this order in the next paragraphs related to the different phases of the supply network.

4.3.2. ENVIRONMENTAL ASPECTS
Life cycle assessments of clothes show that the dominant environmental impact occurs during the user phase. The water, energy and soap used for cleaning the clothes, during the years the clothes are used, have significantly greater environmental impact then all the processes during the other phases of the life cycle. Some current research is focussing on the question how to develop textiles that attract less dirt so they do not require as frequently washing. Also, the industries developing and producing washing machines are researching the environmental aspects of the washing process. The new generation of washing machines use less energy, less soap, less water and can wash at lower temperatures. And the fashion and textile industry focusses on the improvements of the environmental impacts during the other phases of the life cycle (Kozlowski et al., 2012; Blackburn, 2009).

In the design phase, many choices are made that influence the environmental aspects of the next phases. Choices are made concerning the design and the materials (fibers) used. These choices have an environmental impacts though fiber-production and strongly influence the possibilities for recycling the garments following the user phase (van Bommel, 2014). The choice of the colors in the fabric greatly influence the chemicals used, as well as the related water pollution and waste caused by the dying process (Christie, 2007).

Until now, designers of clothes rarely considered the environmental impacts of the choices they made. Their choices were exclusively dominated by the fast changing fashion-trends of designs, materials and colors with no consideration for the environmental (or social) impact of these choices. While design for recycling is becoming a regular component in the development of industrial products this principle is very new for the designing of fashion. This principle is not yet integrated into the curricula of fashion design schools and professionals often show a defensive reaction based on their artistic freedom of fashion design (Fletcher, 2013).
The most relevant environmental aspects related to the production of the fibers are for natural fibers (predominately cotton). The use of pesticides and fertilizers, water, land for crops and the energy needed for the whole process have great repercussions on the environment. The use of pesticides not only protects the crop, but influences the rest of nature (flora and fauna) in the areas, especially were large scale production of fiber occurs. A quarter of all pesticides used worldwide are used in the cotton production (Pimentel, 1995). The excess fertilizers used on cotton fields spreads throughout neighbouring natural and ecological areas by diluting in ground and surface water, influence the natural mineral balance (Heffer, 2013).

A large amount of water is also used in cotton production. The amount of water required for irrigation can be as high as 25,000 liter per kg of cotton produced. This causes an enormous environmental impact, which is further exacerbated by the alterations in the course of rivers often to irrigate the cotton fields. Also, soil becomes excessively salty, as the evaporating water leaves its salt content behind, an effect which is increased by the heavy use of fertilizers (Chapagain et al., 2006; Pfister et al., 2011).

To grow these large amounts of cotton in 60 countries all over the world 5% of all the cultivated land is used. Land that could also have been used to grow crops for food consumption. In preparing the soil, in harvesting the cotton and in transporting the cotton to the factories, large amounts of energy are used. In total the energy consumption is approximately 60 MJ/kg (Yilmaz, 2005).

The man-made/artificial fibers (plastics) are produced from oil or gas. The environmental detriment caused by its production are the scarcity of resources, the use of energy, the pollution of air, water and soil and the production of waste (Andrady, 2003).

The spinning (yarn) and weaving/knitting (fabric) processes require a large amount of energy due to mechanical processes and the climate control required for the spinning and weaving area. Climate control is essential for keeping temperature and moisture at a constant level in order to be able to produce at a constant standard (Hasanbeigi and Price, 2012). In spinning and weaving companies workers are confronted with much noise and cotton dust (see social aspects). And during the weaving process some waste is produced (El Haggar, 2010).

Dyeing has a great environmental impact. This is due to the production of the dyes, the use of water and chemicals, the fixation of the dyes and the drying of the textile. Before dyeing the cotton yarns must be cleaned by sodium hydroxide and detergents to remove natural hydrophobic substances. They are then bleached using sodium hydroxide and hydrogen peroxide. These washing processes and the rinsing that follows the dying process cause a great deal of waste water. In order to prevent water pollution this waste water should be treated before dilution to sewage systems or surface water. The dyeing process is also responsible for a large amount of waste such as empty packaging, contaminated refuse, and cleaning towels (Christie, 2007).

The clothing production and selling and distribution phases do not in themselves cause relevant environmental impacts. Studies suggest that the use of energy and the related air pollution are the most relevant aspects (Kozlowski et al., 2012).
As previously mentioned in the first section of this chapter, the user phase has the largest environmental impact of clothes phases. The washing process shows to have very relevant environmental implications related with the use of soap, energy and the production of waste water (Kozlowski et. al., 2012).

After being used, clothes are sometimes sold as second-hand (re-use), sometimes recycled, but often they will end up in a land-fill or incinerator. The environmental concerns are loss of resources, production of waste and emissions causing air (incineration) and soil/groundwater (land-fill) pollution. The recycling of fibers is increasingly seen as a viable means of drastically reducing the environmental impact of the post use phase while at the same time making the sector less dependent on virgin resources (Wang, 2006).

Another aspect that often seen as an environmental aspect is the animal welfare. For some specific types of fashion products the natural fiber Angora wool is used. The wool is taken from a specific domestic rabbit with an active phase of hair growth double of other rabbits. Angora is intensively farmed in hutches, often in semi-darkness, and its hair is removed on average of every three months. An adult angora rabbit produces up to 1.5 kg of fiber per year (McNitt et. al., 2013). Public debates have been in the media to discuss the way this wool is painfully removed from the rabbits (The Guardian, 2013).

In section 4.4.2 activities concerning the improvement of these mentioned environmental aspects in the life cycle are described. The six selected activities for the empirical research are also explained in more detail.

4.3.3. SOCIAL ASPECTS
The social aspects of clothing sector include the consideration of the social and occupational conditions for those working in the different phases of the chain and the processes that are involved. For example, cotton-farmers come into contact with pesticides; the workers in the weaving and spinning industries inhale dust and work in noisy environments; and workers in the dyeing industries come into contact with the textile chemicals.

The most known social aspect of the sector are the working conditions in the garment industry. The garment industry produces clothes from textile by cutting, sewing and affixing buttons and zippers on the products. This part of the supply chain has an extremely negative reputation within the social aspects of the chain. Consequently, these industries are often referred to as "sweat shops" by NGO’s and the media. The NGO “Clean Clothes Campaign” was established in 1989. Their aim is to improve working conditions and support the empowerment of workers in the global garment and sportswear industries (Clean Clothes Campaign, 2013). They educate and mobilize consumers, lobby companies and governments, and offer direct solidarity support to workers as they fight for their rights and demand better working conditions.

Internationally, much attention has been paid to the atrocious working conditions of the garment industry and many initiatives have been started following the general guidelines of the International Labour Organization (ILO, 2015).

Many governments, including those known for 'cheap labor', signed the ILO Convention and thereby promised to meet the standards of the guidelines.
The World Commission on the Social Dimension of Globalization (WCSDG) stated in 2004 that:

"The rules of the global economy should be aimed at improving the rights, livelihoods, security, and opportunities of people, families and communities around the world."

(World Commission on the Social Dimension of Globalization, 2004)

A long list of subjects is included in the standards of the International Labor Organization such as safety, minimum wages, child labor and freedom of association, among other issues.

In addition to the well-known and often discussed poor working conditions of the garment industries concentrated in Asian countries, attention has also recently turned to child labor practices in cotton picking in Uzbekistan and Turkey (Mintpress News, 2014). The Sumangali system in which women in India earn their dowry by living and working at industrial clothing production sites has been frequently discussed (South and FLA, 2012).

Industrial health hazards are mainly present in the industrial spinning and weaving processes. Respiratory tract diseases represent the most important group of occupational diseases as a result of inhalation of cotton fibers and dust in workplaces. Second the impact of noise-levels at the hearing show to be an occupational health hazard too (Mahmoud et. al., 2004). Another very important occupational hazard is related to the process of sandblasting products like jeans. The process brings under high pressure small particles on the jeans to make them look worn. Workers are often not protected sufficient, inhale the particles and many of them suffer from silicosis, an occupational lung disease (Cimrin et. al., 2006).

In the spring of 2013 a catastrophic accident at a textile (garment) company in Bangladesh occurred, killing more than 1000 employees and bringing international attention to the appalling work conditions of the garment industry. It proved that signing a convention does not guarantee that guidelines will be followed. The combination of hard competition for low market prices, a lack of responsibility within the management of the companies, government enforcement, and organization of the workers result in inexplicable and dangerous circumstances in many companies. As mentioned in section 4.2.4, the textile industry is vital for export in countries such as Bangladesh. For this reason the government does not or cannot prioritize the enforcement of safety regulations in these companies (Islam, 2014).

The accident resulted in a flurry of new activities and intensification of existing activities from companies, sector organizations, NGO’s and governments (Union et. al., 2013).

Section 4.4.3 elaborates on these activities as well as explaining the three selected activities for the empirical research in more detail.

4.3.4. PROSPERITY ASPECTS

The prosperity aspects of the clothing sector consider the economic aspects of the work that takes place in the various phases in the supply chain. Prosperity aspects in the context of sustainable development focus extensively on the social-economic conditions in the supply chain. These conditions are, for example, concerned about the creation of jobs and the development of employment in specific areas. The creation of jobs and employment as a
whole is difficult to monitor and control. It is therefore not explicitly found as a major aspect in sustainability activities (Choi, 2012).

Paying a minimum wage to workers in the industrial phases of the chain and paying an fair price to farmers for the cotton or locally produced clothes and textiles are other examples of prosperity aspects. Paying the minimum wage for labour is an important element of the guidelines of the ILO-convention (see 4.3.3). and is therefore part of the activities concerning the social aspects (Locke and Romis, 2012).

Paying a fair price for agricultural products such as coffee and bananas is the main goal of Fair Trade programmes and initiatives. This approach is also used on small scale for cotton and locally produced clothes. This is further explained in section 4.4.4.

4.4. SUSTAINABILITY ACTIVITIES IN THE CLOTHING SECTOR

4.4.1. INTRODUCTION
To improve the sustainability aspects of the supply chain in the clothing sector (as mentioned in section 4.3) many activities have been developed and are used by companies in cooperation with their stakeholders.

Several organizations have developed competing labels (product-related), guidelines, codes of conduct and certification schemes (organization-related) to improve the performance of social, environmental and economic aspects in the clothing supply networks. Approaches differ greatly from cooperation to standardisation and coordination (Brito et. al., 2008; Forman et. al., 2004; Profas, 2008; Søndergård et. al., 2004; Allwood et. al., 2008; Kogg, 2003 and 2009).

Extensive activities are taking place but questions remain. Who is taking the lead? How are companies selecting what strategy to follow? Which initiative will companies join? Or will they start their own scheme?

In the next paragraphs relevant activities are described and the eleven selected activities for the empirical research are explained in particular detail.

The names and logos of these selected activities can be found in appendix III.

4.4.2. ENVIRONMENTAL ACTIVITIES
The activities found to improve the environmental impacts in the fashion supply networks can be divided into activities concerning product and material and those related to processes in the organization.

The product and material related environmental activities focus on the environmental aspects during the production of the material, the chemicals used and the level of chemicals in the material itself. Most activities do not include the disposal and recycling phase of the product or material.

The four selected product and material related environmental activities for the empirical research are GOTS, EKO, EU-Eco label and Oekotex and they will be explained here. Also the principles of a fifth activity (Cradle to Cradle) that includes the disposal and recycling phase is presented and the reason this activity was not selected for the empirical research is explained.
As mentioned in section 4.3.2 the environmental impact of the production of natural fibers is severe. Consequently, the first initiatives to produce natural fibers in a different way came out of the organic farming experience. These approaches traditionally start with organically produced crops for food however, this has proven also to be suitable for crops like cotton grown to produce textiles. In this means of production the use of artificial fertilizers and pesticides is forbidden during the production phase. Cotton that is produced under these conditions is often referred to as “organic” cotton and is labelled to guarantee that the cotton is recognized. The certification is done by GOTS (Global Organic Textile Standard, 2009) and currently, approximately 5% of the world cotton market consists of organic cotton. Several large international fashion companies such as H&M and C&A have developed ambitious environmental policies to greatly increase the amount of organic cotton in their collection in the next 10 to 15 years (Illge and Preuss, 2012).

Also, many smaller companies in niche markets explicitly choose organic cotton for their products. However, the transition from traditional cotton farming to organic cotton farming takes time. The percentage of “organic” cotton in the world market can only increase slowly (Ivanovic, 2012).

The GOTS certification has expanded its range to also include the use of chemical substances during the industrial production phases. For these phases they restrict the use of synthetic substances and ban the deliberate use of nano-technologies in the textile processing (Black, 2009).

A traditional Dutch initiative certifying the ecological production of agricultural crops uses the EKO-logo. This is a very well-known label within the Dutch market for the recognition of organically grown fruit, vegetables and meat. The EKO logo for textiles is relatively unknown in the market. However, the approach is also suitable for the production of natural fibers used in textiles. This standard is also working towards being completely harmonized with GOTS (EKO, 2009).

The EU-Ecolabel was introduced to the market by the European Union. The first version of the ecological criteria for the award of the Community Ecolabel for textile products was published in 2009 (Nash, 2009) and was revised in 2013. The criteria focus on the use of sustainable fibers, the durability and quality of the material and the restriction of hazardous substances. Also, the use of water and energy during the processes and some management and policy aspects have become part of the list of criteria (Choudhury, 2015).

The Oekotex Standard 100 is of German origin but is now recognized as an international testing and certification system for textiles. Its primary criteria is limiting the use of certain chemicals. The first version of the standard was developed in 1992. The criteria used are based on the latest scientific findings concerning human ecological safety. Originally, the focus was strictly the safety (health) of the consumer wearing the clothes. Recently, the standard has indirectly come to include the environmental impacts of the life cycle of textile materials and products (Oekotex, 2006).

The four presented product or material related environmental activities above do not include the disposal phase of the product. Cotton can be produced without chemicals and be so-called “organic” but when it is put in a land-fill or burned after the user phase new cotton
fibers will have to be produced for the next articles of clothing. This process will once again use water, surface and energy. So why not recycle the fibers?

The cradle to cradle (C2C) principle states that all circles for materials should be closed by using renewable energy. Also, textile materials should by this principle be either biodegraded into the biological circle or recycled into the technical circle. To make sure that no contamination occurs in the biological or technical circles, the requirements for chemicals and additives used in the original materials are strictly regulated. The products must also be designed and manufactured in a way so recycling is possible (Braungart et. al., 2007).

Some textile production companies have adapted the cradle to cradle principle. They have also certified some of their products primarily at “silver” level. Silver level means that the product is recyclable according to the Cradle to Cradle principles but that the products are (not yet) made out of recycled material. Most of the examples in the textile sector are industrial textiles or working clothes (HAVEP-Rework, 2014) At the time that this survey was conducted, companies designing and producing regular clothes and fashion were rarely utilising this principle and the related certification scheme. at the time the survey was conducted For this reason, this activity was not selected for the empirical research.

In addition to the four product and material related activities two organizational activities were selected for use in the survey. These activities are the use of an environmental management system and involvement in recycling projects.

The level of environmental management in the organizations as part of the supply network is increasingly being considered. For example, it is now possible to ask for an environmental management system certificate to ensure that dyeing companies treat their waste water before diluting it into the river or sewage system. The international environmental management system standard, or ISO14001, is the first version of certification standard. It was introduced to the market in 1996 (Clements, 1996).

The standard is known and used greatly in the international market. This international standard for environmental management can be voluntarily introduced into an organization but can also be demanded by the suppliers (Nawrocka et., al., 2009). However, some companies have developed their own schemes because the ISO14001 was viewed as too strict too expensive for implementation. this has made independent quality control very difficult.

As part of the environmental management strategies, textile industries also started joining Cleaner Production projects (Alkaya et. al., 2014). These projects were often offered by National Eco-Efficiency Programmes as stimulated by the United Nations Industrial Development Organization/Environmental Programme UNIDO/UNEP (Luken et., al., 2015). These projects focus on the improvement in the efficiency of the production processes in the textile industry with the aim to reduce waste and emissions.

In addition to the responsibility for the environmental aspects of the suppliers, “focal” companies, have begun to feel increasingly responsible for the environmental impacts of their products at the end of the life cycle (Cuc et. al., 2011).
Until recently the recycling of clothes was not a regular activity for “focal” companies. Now, recycling projects for fashion and clothes are increasingly being developed and the “focal” companies are becoming involved (van Bommel, 2014; Song et. al., 2015).

For this reason, participants in the survey were also asked about involvement in textile recycling projects.

4.4.3. SOCIAL ACTIVITIES
In reaction to public pressure concerning the social aspects of the clothing industry several programmes, initiatives and standards have been developed over the last decades. Three approaches (SA8000, FWF and BSCI) used and selected for the empirical research are explained.

After the accident in Bangladesh in 2013 some new activities have been introduced by different actors involved. These activities were initiated after the survey was conducted and could therefore not be part of the survey. In some of the case studies in chapter 6 these activities are being mentioned because the case-studies have been analysed in 2014.

A standard with a high performance level addressing social aspects is the Social Accountability SA8000 (SAI, 2008; Leipzeiger, 2001; Stigzelius, 2008). This certifiable standard uses the principles of a management system like ISO 9000 (Quality) and ISO 14000 (Environment) to control a certain level of social management in the organization. The standard shows to be rarely adhered to in the fashion and clothing sector. This is primarily due to the strict criteria that is difficult to meet and the high costs of consultancy, auditing and certification.

Because of the stringent and costly regulation of the SA8000, several other initiatives, without certification, concerning the social aspects in international supply networks have been developed.

A well-known business programme in Europe is the Business Social Compliance Initiative BSCI was established in 2003 by the Foreign Trade Association (FTA) in order to create consistency and harmonization for companies wanting to improve their social compliance in the global supply chain. BSCI aims to establish a common platform for the various European companies Codes of Conducts and monitoring systems. It also lays the groundwork for a common monitoring system for social compliance. The programme is a business initiative, not only for the fashion and clothing sector, and without certification. In practice, many textile and clothing companies join this initiative. This initiative is an example of an “open” scheme initiative. Participants promise to improve the social aspects and maintain transparent activities and results (BSCI, 2009).

As well as the certification scheme of SA8000 and the open business-scheme of BSCI, several “open” multi-stakeholder-initiatives (MSI’s) have been developed concerning the social aspects. Within these initiatives, the different stakeholders (for example; businesses, sector-organization, trade-unions, consumer, and human right organizations) are represented, creating public support. A Dutch international multi-stakeholder initiative that was selected for the empirical research is called the Fair Wear Foundation. This foundation was established in 1999 as a Dutch Initiative with its head office in Amsterdam. Representatives of the Dutch trade unions and the NGO Clean Clothes Campaign have become part of the foundation. The number of companies joining this programme has
increased to approximately 120 members and the foundation now has offices in six countries (Fair Wear Foundation, 2009).

As a reaction to the accident in 2013 in Bangladesh in May 2013 an “Accord on Fire and Building Safety in Bangladesh” (Union et. al., 2013) was published and signed by many actors (including companies) involved. The coordination of the implementation of the accord is in the hands of the International Labor Organization (International Labor Organization, 2015). This accord recognized was that no new regulations, standards or guidelines were needed but that awareness must be increased and that the control and enforcement must be strengthened. In the Netherlands, three Dutch organizations in the fashion producing and retail sector (Modint, InRetail and VGT) published a plan in cooperation with NGO’s, trade unions and the government, in order to improve social and environmental conditions in the fashion and textile supply chains worldwide. In this plan the founders stipulate a responsibility to persuade fellow members to act according to the plan and engage other European sector organizations joining this initiative (RND, 2013).

The Dutch minister of foreign affairs was actively involved in the development of the UN and ILO “Accord on Fire and Building Safety in Bangladesh”. The Dutch government also financially supported the training of factory-inspectors working for the national government in Bangladesh and they gave financial support to the trade unions for workers in the fashion industry in cooperation with ILO and IFC (Better Work, 2013).

4.4.4. Fair Trade and Made By

Fair Trade is a label used to show the consumer that an honest price has been paid to the producers and farmers that helped make that garment. Over time, other criteria related to sustainable development have become part of the Fair Trade certification but their focus remains the fair price. It is a well-known label for products like coffee and bananas. But it is also used for textile, clothes and fashion. The number of companies using Fair Trade certification for fashion and clothes is rather limited (Goworek, 2011).

Made By is a European non-profit organization that assists fashion companies to improve social and environmental conditions in their supply network. Companies can become a Made-By partner and show that to the consumer with the Blue Button Label. With scorecards and a track and trace system they exchange information with other brands and the consumers (Made-By, 2008, 2009 and 2011).

4.4.5. The Development of Sustainability Activities

It is clear that initiatives concerning the environmental and social aspects in the clothing supply network are widespread. Projects concerning collaboration between initiatives, however, have not been successful (Jo-In, 2007). Initiatives can be categorised into environmental vs. social, and product vs. organization, as well as into business vs. multi-stakeholder, and open schemes vs. certification schemes.

Multi-stakeholder initiatives are all open schemes and focus exclusively on social aspects while the initiatives concerning the environmental aspects are predominantly business driven and include certification schemes. Some social initiatives have started to evolve into environmental aspects. For example, the Business Social Compliance Initiative is considering expanding their criteria to include environmental aspects. Also, the Fair Wear
Association is debating whether to integrate environmental aspects into their programme. In the long term, integrated sustainability initiatives for the implementation of environmental and social aspects in the clothing supply network could result.

These initiatives can also be divided into different levels of performance. In 2008 a benchmark was published (Made-By, 2008) that classified social initiatives in the clothing and fashion supply networks into four levels. In 2009 a benchmark was published (Made-By, 2009) to classify the environmental performance of fibers.

As long as collaboration between initiatives will not lead to more integral sustainability activities companies will keep on developing their own “tailor-made” strategy within the wide range of initiatives in reaction to the external pressure.

4.4.6. Sustainability activities used in the empirical research

In section 4.4 the eleven sustainability activities that were selected to be used in the empirical research have been explained. Appendix III summarizes the names and logos. In chapter 5 and 6 these activities are included in the results of the survey and the case-studies. Before these results can be presented and analyzed in the next chapters, the general characteristics of the respondents to the survey are presented in the next section.

4.5. General characteristics of the respondents in the survey

4.5.1. Introduction

As explained in chapter 3 the first phase of the empirical research was conducted using an on-line questionnaire (appendix IV). Forty-four out of ninety-one companies responded and twenty-nine of them answered all questions. This section presents the results concerning the general characteristics of the respondents such as the size (turnover and number of employees) of the company, the business-model that fits the company best and the country where the headquarter is situated. The answers to the other questions asked and the results of the scores given to the statements concerning the innovation characteristics will be presented and analyzed in chapter 5.

4.5.2. Size of the focal company

Turnover

One indicator of size is yearly turnover. Respondents were asked to answer the question in which category the turnover of their company fell in the year 2008. The respondent could choose from five categories and the results are presented in table 1.
Table 1: Turnover in 2008 of the respondents

All forty-four respondents answered this question. The results show that the respondents are equally spread over the five categories of turnover. Also, the results of the twenty-nine respondents that answered all the questions of the survey in the table mirror this rather equal spreading. Concluded is that the respondents represent a diversity of companies based on turnover as an indicator.

Because some of the respondents are part of an international company (see section 4.5.4) and because the questionnaire did not specifically ask the turnover in the Netherlands, the answers given may also include a turnover in other countries outside the Netherlands.

**Number of employees**

Another indicator for size is the number of employees. The respondents were asked how many employees their company had in the Netherlands. The results of the answers given are shown in table 2 for all respondents (forty-four) and for the respondents that answered all questions (twenty-nine).

<table>
<thead>
<tr>
<th>Number of employees</th>
<th>Number of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>44</td>
</tr>
<tr>
<td>0-10</td>
<td>14</td>
</tr>
<tr>
<td>10-50</td>
<td>14</td>
</tr>
<tr>
<td>50-100</td>
<td>5</td>
</tr>
<tr>
<td>100-200</td>
<td>7</td>
</tr>
<tr>
<td>&gt;200</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 2: Number of employees of the respondents
The results show that the majority (twenty-eight out of forty-four and twenty-two out of twenty-nine) are small and medium sized enterprises (SME’s). The SME’s are defined as having less than fifty employees (European Union, 2005).

As we have seen, the other indicator of the size of a company, the turnover, shows a wider variety as the number of employees in the Netherlands. It shows that even when a company has a low number of employees in the Netherlands the turnover can still be rather large. For this research the turnover seems to be more relevant for determining size because it is directly relates to the amount of products (clothes) sold and the number of employees in the Netherlands is not.

4.5.3. THE BUSINESS MODEL

The respondent was asked about the position of their company in the supply network and their interaction with the different partners in the supply network.

Seven business models representing different relations with the phases in the supply network (as explained in section 4.2.3 and illustrated in figure 3) were presented. The respondent was asked to choose the business-model that best suited their company.

This question was answered by forty-four respondents and the results are shown in table 3. In the last column the results are shown for the twenty-nine respondents that answered all the questions of the survey.

<table>
<thead>
<tr>
<th>Business-model</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>44</td>
</tr>
<tr>
<td>Column</td>
<td>10</td>
</tr>
<tr>
<td>Head-Tail</td>
<td>16</td>
</tr>
<tr>
<td>Private label</td>
<td>5</td>
</tr>
<tr>
<td>Brand</td>
<td>6</td>
</tr>
<tr>
<td>Subcontractor</td>
<td>2</td>
</tr>
<tr>
<td>Network</td>
<td>2</td>
</tr>
<tr>
<td>Retail</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 3: Business models of the respondents

Results show that the “head-tail” companies are the largest group under the respondents (sixteen out of forty four). Only twelve (column and subcontractor) respondents own the production phase and produce the products themselves. Of the twenty nine respondents that answered all questions, the spread over the different business models shows the same pattern. Concluded is that 75% of the respondents outsource the production to subcontractors, often situated in Asia. They do not have direct control of the sustainability performance in this phase of the supply network. consequently, it is expected that they can and will join sustainability activities to develop indirect control (see section 5.2).
4.5.4. **Country of Headquarter**

Table 4 shows the countries where the headquarters of the respondents are situated.

<table>
<thead>
<tr>
<th>Country</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>44</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>29</td>
</tr>
</tbody>
</table>

The numbers clearly show that the majority of the respondents have their headquarters in the Netherlands. For this reason, the answers given to the different questions should be interpreted as representing the Dutch perspective.

These results also show that the results presented in section 4.5.2 concerning the turnover of the company also represent the situation in the Netherlands.

4.6. **Summary and Conclusion**

This chapter summarized general information of and the most relevant sustainability aspects and selected activities in the clothing sector. Also the general characteristics of the respondents based on the answers they gave to the questions in the questionnaire were presented.

The clothing sector is a large and very complex global industrial sector. Garment production is predominately located in Asia while many consumers live in Europe and the United States. In 2000 the world consumers spent approximately 1 trillion US dollars on clothing. The developing countries account for almost three quarters of the world clothing exports. Approximately 13.5 million people work in the clothing manufacturing sector worldwide. Upwards of 70% of these workers are women responsible for the sewing, finishing and packing of clothes. Because of the size and the historical dependence on inexpensive labour the sector has been subject to intense political criticism. Many international trading agreements, programmes and other activities to improve the working conditions are being put forward. Influenced by the atrocious accident in a textile company in Bangladesh in the spring of 2013, a new accord focussing on the safety of buildings was being developed. In the empirical research, three programmes/activities for the improvement of the working conditions in the fashion and clothing sector were used. They were the Business Social Compliance Initiative (BSCI), the Fair Wear Foundation (FWF) and the Social Accountability (SA8000) certification. These programs were selected because they are most frequently
used by Northern European focal fashion companies. The content of these three programmes/activities was explained in section 4.4.3.

Because of the fibers used and the production processes of clothes, also the environmental aspects are recognised as having important societal impacts. Important aspects are the large amounts of fertilizers, pesticides and water used in the cotton cultivation, the chemicals used for dyeing and finishing garments and the enormous amounts of waste produced reaches the end-of life phase. Clothes are rarely recycled and often end up in a landfill or an incinerator. For the empirical research five environmental programmes/activities were selected and explained in section 4.4.2. They are the Global Organic Textile Standard (GOTS), the Dutch EKO label, the European EU-Ecolabel, Environmental Management Systems (ISO14001) and Recycling Projects for used clothes.

In the survey respondents were asked to answer questions concerning general characteristics of their company. The results of the forty-four (out of ninety one) respondents were presented in section 4.5 and illustrate that most respondents represent small and medium sized companies (below 50 employees) with a variety of turnovers in 2008 between 1 million euros to more than 50 million euros a year. Nearly all the respondents have their headquarters in the Netherlands and three quarter of the respondents outsource the production phase thereby relinquishing direct control over the sustainability performance during this phase.
CHAPTER 5. FOCAL COMPANY CHARACTERISTICS AND SUSTAINABILITY

ACTIVITIES IN THE CLOTHING SECTOR

A summarized version of this chapter was published as chapter 5 in the edited collection “Sustainable Fashion and Textiles” (van Bommel, 2013)

5.1. INTRODUCTION

In order to answer the questions formulated in chapter 2, this chapter will present the results of analysis. The analysis is based on the empirical data collected via a survey held in the spring of 2010 as was explained in more detail in chapter three “research strategy”.

In chapter 4 (section 4.5) the general characteristics of the respondents was presented. This chapter focuses on the results concerning the participation in sustainability activities, the influence of external factors on the sustainability strategy, the innovation characteristics of the focal company and the connection between these different factors.

In this chapter, section 5.2 presents the answers given by the respondents to the questions concerning their participation in sustainability activities and an explanation about how aggregated scores have been made. Based on these figures, the correlation between the general characteristics presented in section 4.5 and the participation in sustainability activities will be analyzed in section 5.3.

The results of the scores given by the respondents to the external influencing factors concerning the sustainability strategies are presented in section 5.4. The correlation of these scores with the participation in sustainability activities will be analyzed in the same sector.

In the first part of section 5.5 the scores given to the innovation characteristics (independent variable) are presented and some descriptive conclusions regarding these scores are drawn. Sections 5.5.3 until 5.5.5, analyse the correlation between the scores given to the innovation characteristics and the participation in sustainability activities (dependent variable). This is done on several levels with aggregated scores of the innovation characteristics and the different sustainability activities, as well as at lower, individual, levels of the different characteristics and activities. The conclusions are summarized in section 5.5.6.

Respondents with certain innovation characteristics can potentially give specific external influencing factors for stimulating sustainability activities a higher score because they might be more sensitive to these factors. To test this assumption, the scores given to the external influencing factors are correlated with the scores given to the internal innovation characteristics in section 5.6.
5.2. SUSTAINABILITY STRATEGIES AND PARTICIPATION IN SUSTAINABILITY ACTIVITIES

5.2.1. Strategies
In the fourth section of the questionnaire (as explained in chapter three) respondents were asked to formulate the sustainability strategy of the company in their own words. The descriptions respondents gave concerning their strategy varies. Some honestly stated that they do not have a strategy mentioning the specific initiatives they join. Their focus is on specific sustainability aspects (energy, waste, materials, cotton, labour conditions etc.). They refer mainly to environmental aspects and only a few refer to social aspects. This can be caused by the word “sustainability” that is often interpreted as referring solely to “environmental” factors. An overview of the descriptions can be found in appendix VI and some examples are presented in table 5.

<table>
<thead>
<tr>
<th>Sustainability Strategies mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Sustainability in the supply chain is a basic condition, Fashion &amp; Education is the leading theme. Where possible, we want to link the Sustainable Strategy to strategic business targets.</td>
</tr>
<tr>
<td>2 Unclear</td>
</tr>
<tr>
<td>3 We sell products that cause as low as possible environmental impacts and are produced in a social responsible way.</td>
</tr>
<tr>
<td>4 Today’s pressure for surviving is the main factor determining our sustainability strategy.</td>
</tr>
<tr>
<td>5 We have developed an agricultural project for bio-cotton together with Solidaridad and we have developed a machine that can dye garments without water.</td>
</tr>
<tr>
<td>6 No strategy.</td>
</tr>
<tr>
<td>7 Sustainability in our company is very much focusing on prevention of waste and conscious use and treatment of materials/products.</td>
</tr>
</tbody>
</table>

Table 5: Examples of sustainability strategies formulated by respondents

The descriptions illustrate that strategies are often implicit, do not always exist and are therefore hard to measure. Acquaintance with and participation in activities can be recognised and measured more easily. This participation implicitly indicates the true strategies companies have.

5.2.2. Activities
In the questionnaire (appendix IV), eleven sustainability activities were described. Participants were asked if each activity was known within the organization. If yes, they were
asked if they already participated in or if they expected that the organization to participate in this activity in the coming years?

The eleven selected activities are presented with their logo’s in appendix III. The content of the activities has been explained in chapter four, section 4.4. The eleven selected sustainability activities proved to be well-known among the 29 respondents and many of them participate (or are planning to do so) in these activities. None of the activities appeared to be known by less than 10 respondents. These results are in line with the assumption that the respondents are front-runners and their ready participation was one of the reasons this group of companies within the sector was selected.

Within the range of medium and high acquaintance-scores (between 10-29) the results showed enough variety to use them for analysing the link between the innovation characteristics of a company and their participation in sustainability activities. For this analysis the scores for each activity were separately reorganised into a five-point scale.

This five point scale represents:

1. not known
2. known but we do not participate
3. known and we may participate
4. known and we will participate soon
5. known and we already participate

This scale represents an increasing level of knowledge of and participation in the sustainability activity.

To determine acquaintance with and participation in the categories of sustainability activities three scores were developed. A total score for participation in “social” activities, a total score for participation in “environmental” activities and a total score for participation in all “sustainability” activities. These “total” scores represent increasing levels of acquaintance and participation for the different categories of sustainability activities.

Three out of the eleven activities were not used for the analysis and are therefore not part of the aggregated scores. Oekotex was known and used by nearly all the respondents and would therefore show no results in the analysis. Fair Trade was hardly recognized as a social or environmental activity because it focuses mainly on the economical (paying a fair price) aspects of sustainability. A third activity, Made-By, was not used for the analysis because they use activities that are part of other activities used so it would cause an overlap in the analysis. For these reasons, only eight out of eleven activities were used in the analysis.

The total score for “social” activities was a sum of the BSCI, FWF and SA8000 scores. This score could have a theoretical range between 3 as a minimum (all three not known) and 15 as a maximum (all three known and used). The empirical results of the answers given by the respondents showed a range between 3 and 12.
The total score for "environmental" activities was the sum of EU-Eco label, EKO, GOTS, ISO14001 and Recycling (the first three are related to the material and product and the other two to the organization). This total score for environmental activities can theoretically range between 5 (all five not known) and 25 as a maximum (all five known and used). The empirical results showed a range between 5 and 19.

The total score for all sustainability activities summarized the total score of the three "social" activities and the total score of the five "environmental" activities. These scores could theoretically range between 8 (all activities not known) and 40 (all activities known and used/participating). The empirical results showed a range between 9 and 29.

The number of respondents representing the different categories of aggregated scores are summarized in table 6.

<table>
<thead>
<tr>
<th>Activities</th>
<th>N=29</th>
<th>5-10</th>
<th>10-15</th>
<th>15-20</th>
<th>20-25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental</td>
<td></td>
<td>14</td>
<td>5</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td>12</td>
<td>9</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>Sustainability</td>
<td></td>
<td>12</td>
<td>11</td>
<td>6</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 6: Number of respondents versus aggregated scores of acquaintance with and participation in environmental, social and sustainability activities.

These aggregated scores show, just as the individual scores did, that they are well spread over the activities. The three aggregated scores for acquaintance with and participation in sustainability, environmental and social activities have been analysed in relation to the general characteristics of the focal company (section 5.3), the influence respondents gave to external factors (section 5.4) and the innovation characteristics of the focal company (section 5.5).

5.3. GENERAL CHARACTERISTICS AND PARTICIPATION IN SUSTAINABILITY ACTIVITIES

The main question of this research is if a relation can be found between the innovation characteristics of the "focal" company and the participation in social and environmental activities as the result of a sustainability strategy. Based on literature, it is assumed that other general characteristics do not explain the differences found in sustainability strategies thoroughly by itself. To test if this assumption is supported by the empirical data gathered in this research, the relations between the general characteristics and the sustainability activities were analysed. The general characteristics for size of the company were turnover
and the number of employees in the Netherlands. Also, the business model and the country of the companies head office are seen as general characteristics. The descriptive results of these general characteristics were presented in section 4.5.

The turnover of the respondents showed to be equally spread over the five categories defined. After analysis (Spearman’s Rho, one tailed), the turnover shows to have a positive significant correlation (Rho=0.497, p<0.01) with the participation of the respondents in social activities in the supply network. Conversely, this relation does not appear to be significant with regards to the participation in environmental activities. See the results in the table 7.

<table>
<thead>
<tr>
<th>Turnover</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total participation in</td>
<td>0.497**</td>
</tr>
<tr>
<td>Social activities</td>
<td></td>
</tr>
<tr>
<td>Total participation in</td>
<td>0.022</td>
</tr>
<tr>
<td>Environmental activities</td>
<td></td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (p<0.01)

Table 7: The correlation between the turnover and the total participation in social and environmental activities

The majority of respondents indicated less than 50 employees. The analysis show that the number of employees has a positive (but not significant) relation with the participation of the respondents in social activities in the supply network and no relation with the environmental activities. See the results in the table 8.

<table>
<thead>
<tr>
<th>Number of employees</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total participation in</td>
<td>0.260</td>
</tr>
<tr>
<td>Social activities</td>
<td></td>
</tr>
<tr>
<td>Total participation in</td>
<td>0.121</td>
</tr>
<tr>
<td>Environmental activities</td>
<td></td>
</tr>
</tbody>
</table>

Table 8: The correlation between the number of employees and the total participation in social and environmental activities

As presented in section 4.5 most respondents have a business model that does not include the production phase.

In the tables 9 and 10 the seven business models and the scores for acquaintance with and participation in environmental (table 9) and social (table 10) activities are shown.
Table 9: Business models and the participation in environmental activities

Table 10: Business models and the participation in social activities

Because of the low number of respondents for each business model, statistical analysis could not be conducted. The three models “column”, “head-tail” and “brand” together, represent 23 out of 29 respondents. Therefore, the mean scores concerning social and environmental activities were calculated for these three models. The results are shown in the table 11.

<table>
<thead>
<tr>
<th>Mean score</th>
<th>Column Company (n=7)</th>
<th>Head Tail (n=11)</th>
<th>Brand (n=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Total (5-25)</td>
<td>7.5.</td>
<td>11.0</td>
<td>15.8</td>
</tr>
<tr>
<td>Social Total (3-15)</td>
<td>5.5.</td>
<td>8.7.</td>
<td>9.6</td>
</tr>
</tbody>
</table>

Table 11: The medium scores for the “column-”, “head-tail-” and “brand-” companies concerning the participation in social and environmental activities
The results show the same pattern for the mean scores of both the total acquaintance and participation in the environmental and social activities even though the differences are not significant. The mean scores of the “brands” are the highest and the mean-scores of the “head-tail” companies are lower but higher than the scores of the “column” companies. The low mean scores of the “column” companies may be caused by the fact that these companies own the production phase and therefore feel less need to participate in external activities to control conditions in other organizations.

Because the results in 4.5 show that the vast majority (38 out of 44) of the respondents have their head-office in the Netherlands and the head-offices of the others are situated in six different countries, no statistical analysis has been made with this factor.

Conclusions

From the general characteristics, only the “size” of the company in terms of “turnover” proves to be significantly related to the company's participation in social activities in the supply network. Companies with a larger turnover participate more in social activities than companies with a smaller turnover. “Size” is often seen as having the power to influence changes and from this perspective participation in activities that stimulate these changes would be expected from companies with more power. However, as was concluded in chapter two, general characteristics (like size) do not alone explain the different strategies focal companies choose concerning the sustainability strategies alone and different strategies may be found in companies with a similar size. Therefore, also other factors show to influence the development of the strategies. The framework presented in chapter 2 suggest that innovation characteristics of the focal company may play an important role.

Therefore, the correlation of the social and environmental activities with the innovation characteristics is tested in section 5.5. In the discussion section, 5.6, these factors are combined to estimate their relative contribution.

The amount of employees does not prove to have a significant relation with the participation in social activities. Because the amount of employees only involves the people working for the company in the Netherlands and the turnover was asked for the (international) company as a whole, turnover is a better indicator for size than the number of employees. This may also explain why “turnover” does show a positive significant relation with the social activities and the number of employees does not, despite the fact that the two are related at the same geographical scale.

Participation in environmental activities does not appear to have a significant correlation with turnover and the number of employees. Because participation in social activities does show a positive result the conclusion can be drawn that sustainability strategies are not integral strategies. The decisions made to participate in “environmental” activities can be influenced by different factors and the decision making processes may follow a different route than they do for the social activities.

In this sample, the “head-tail” companies and the “brands” have a higher (not significant) mean-level of knowledge and participation in sustainability activities as the “column” companies. This can be explained by their position in the supply network. They both own the design and distribution phase only and out-source the production. Because of their strategic position, they feel responsible but cannot control social and environmental
conditions in the production phase themselves. Therefore the need to join activities for controlling these conditions in the production phase is higher as for the "column" companies that own the production phase.

5.4. EXTERNAL INFLUENCING FACTORS AND PARTICIPATION IN SUSTAINABILITY ACTIVITIES

5.4.1. EXTERNAL INFLUENCING FACTORS
As explained in chapter three, the respondents of the survey were also asked how eleven external factors influenced their sustainability strategy. They were asked to what extent the importance placed on environmental and social aspects in the supply network was influenced by a specific factor. A score from 1 to 5 could be given to each factor. A score of 1 represents “no influence” while a score of 5 represents “very much influence”. The eleven selected external factors can be found in appendix II and are explained in more detail, together “external pressure”, in chapter two. Table 12 shows the scores given by thirty-one respondents. The first row of every factor contains the scores given for the influence of environmental aspects and the second row of social aspects. As can be seen in the table, all the calculated mean-scores for the eleven factors and both social and environmental aspects show to be 2.7 or higher. This leads to the conclusion that all eleven influencing factors are seen as relevant factors by the respondents. Two interesting “minor” differences were found in the scores given to the influence of the factors for environmental aspects versus social aspects.

The scores given to the factor: “demand of the consumers” concerning the environmental aspects (mean 3.7) appear to be slightly higher than the scores given to this same factor concerning the social aspects (mean 3.1). Thusly, one can conclude that the respondents believe that consumers expect them to pay more attention to the environmental aspects than to the social aspects. This is despite the fact that social aspects receive more attention in public debate than environmental ones (see chapter four for more details). The scores given to the factor “request of shareholder/owner” show the opposite result. Here the scores given to this factor concerning the environmental aspects (mean 2.8) are lower than the scores given to this same factor concerning the social aspects (mean 3.5). Therefore, it can be concluded that the respondents believe that the shareholders or owner wants them to pay more attention to the social aspects than to the environmental aspects. This difference may be explained by the fact that the shareholders/owners appear to be more influenced by the public debate on the social aspects than the consumers are. However, the differences are minimal as the mean scores differ marginally between 2.7 and 3.8. Consequently, specific conclusions on individual factors are difficult to make. Based on these results, it can be concluded that the external pressure to pay attention to sustainability in supply networks is significant and influenced by many different factors at the same time. No factor shows to be “the” dominating external factor for participation in social or environmental activities. The external pressure are very divers and therefore, not one of these factors can singly explain the sustainability strategies and activities found in practice.
Table 12: The influence given to eleven external factors on the attention paid to social and environmental aspects in the supply network of the organization

<table>
<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government with regulations</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>18</td>
<td>5</td>
<td>3.8</td>
</tr>
<tr>
<td>Government with agreements and covenants</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>17</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>Government with information and subsidies</td>
<td>2</td>
<td>2</td>
<td>14</td>
<td>10</td>
<td>3</td>
<td>3.3</td>
</tr>
<tr>
<td>Demand from consumers</td>
<td>4</td>
<td>6</td>
<td>15</td>
<td>4</td>
<td>2</td>
<td>2.8</td>
</tr>
<tr>
<td>Demand from partners</td>
<td>4</td>
<td>9</td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>2.8</td>
</tr>
<tr>
<td>Positive image</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>13</td>
<td>9</td>
<td>3.7</td>
</tr>
<tr>
<td>Request of shareholder/owner</td>
<td>4</td>
<td>3</td>
<td>13</td>
<td>8</td>
<td>3</td>
<td>3.1</td>
</tr>
<tr>
<td>Competition</td>
<td>1</td>
<td>2</td>
<td>10</td>
<td>12</td>
<td>6</td>
<td>3.6</td>
</tr>
<tr>
<td>Pressure van groups in society</td>
<td>1</td>
<td>7</td>
<td>9</td>
<td>11</td>
<td>3</td>
<td>3.3</td>
</tr>
<tr>
<td>Risk off loss of reputation</td>
<td>1</td>
<td>0</td>
<td>12</td>
<td>15</td>
<td>3</td>
<td>3.6</td>
</tr>
<tr>
<td>Reduction of costs</td>
<td>6</td>
<td>0</td>
<td>14</td>
<td>6</td>
<td>5</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>1</td>
<td>7</td>
<td>12</td>
<td>7</td>
<td>3.5</td>
</tr>
</tbody>
</table>

1=no influence ..........  5=very much
first row = environmental
second row = social
N=31
5.4.2. EXTERNAL FACTORS INFLUENCING THE PARTICIPATION IN SUSTAINABILITY ACTIVITIES

The theories and frameworks presented in chapter 2 conclude that participation in sustainability activities is primarily influenced by general characteristics, like size, and external influencing factors, like external pressure. In section 5.3 the relation between these general characteristics to the sustainability strategy was analyzed and this section will analyze the relation of the strategies with the external influencing factors.

A separate analysis for environmental and social aspects and activities was conducted. Table 13 shows the calculated Spearman’s Rho values (one-tailed) of the correlation between the scores given to the influencing factors concerning the environmental aspects and the total score for participation in environmental activities.

<table>
<thead>
<tr>
<th>No.</th>
<th>External influencing factors</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Demand of consumers</td>
<td>0.427*</td>
</tr>
<tr>
<td>2</td>
<td>Wanting to have a positive image</td>
<td>0.309</td>
</tr>
<tr>
<td>3</td>
<td>Request of a shareholder/owner</td>
<td>0.235</td>
</tr>
<tr>
<td>4</td>
<td>Government with information and subsidies</td>
<td>0.186</td>
</tr>
<tr>
<td>5</td>
<td>Driven by Competition</td>
<td>0.130</td>
</tr>
<tr>
<td>6</td>
<td>Government with agreements and covenants</td>
<td>0.078</td>
</tr>
<tr>
<td>7</td>
<td>Risk of reputation loss</td>
<td>-0.001</td>
</tr>
<tr>
<td>8</td>
<td>Government with laws and regulations</td>
<td>-0.015</td>
</tr>
<tr>
<td>9</td>
<td>Reduction of costs</td>
<td>-0.026</td>
</tr>
<tr>
<td>10</td>
<td>Demand from partners in the supply network</td>
<td>-0.040</td>
</tr>
<tr>
<td>11</td>
<td>Pressure from NGO’s</td>
<td>-0.178</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (p<0.05)

Table 13: Ranks of correlations between the influence given to the eleven external factors and the participation in environmental activities

A significant relation was found between the scores given by the respondents to the “demand of consumers” and the participation in environmental activities (Rho=0.427, p<0.05). It can be concluded that respondents that recognize the demand of the consumer
as an important influencing factor participate more in environmental activities than the respondents that give a low score to the demand of the consumer.

Also, the five environmental activities (GOTS, EKO, EU-Eco label, ISO14001 and Recycling) were separately analysed. The results are presented in the tables 14 -18.

<table>
<thead>
<tr>
<th>No.</th>
<th>External influencing factors</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Request of a shareholder/owner</td>
<td>0.459*</td>
</tr>
<tr>
<td>2.</td>
<td>Demand of consumers</td>
<td>0.287</td>
</tr>
<tr>
<td>3.</td>
<td>Wanting to have a positive image</td>
<td>0.220</td>
</tr>
<tr>
<td>4.</td>
<td>Government with information and subsidies</td>
<td>0.194</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (p<0.05)

Table 14: Ranks of correlations between the influence given to some external factors and the participation in GOTS

A significant positive correlation was found (Rho=0.459, p<0.05) between the scores given to the "request of a shareholder/owner" by the respondent and the participation in the GOTS programme (use of organic cotton). It can therefore be concluded that companies that feel the pressure from shareholders/owners on environmental aspects join the organic cotton programme of GOTS more often.

<table>
<thead>
<tr>
<th>No.</th>
<th>Independent variable</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Demand of consumers</td>
<td>0.269</td>
</tr>
<tr>
<td>2.</td>
<td>Wanting to have a positive image</td>
<td>0.153</td>
</tr>
<tr>
<td>3.</td>
<td>Government with information and subsidies</td>
<td>0.013</td>
</tr>
<tr>
<td>4.</td>
<td>Driven by Competition</td>
<td>-0.118</td>
</tr>
</tbody>
</table>

Table 15: Ranks of correlations between the influence given to some external factors and the participation in EKO

A positive, but not significant in this relatively small sample, correlation was found between the scores given by the respondent to the demand of the consumers and the participation in the EKO programme by the company.
Also, the influencing factors “demand of the consumer” and the “risk of reputation loss” show a positive, but not significant relation in this relatively small sample in reference to the EU Eco label. The pressure from NGO’s as well as the influence of the government through laws and regulations show no correlation to participation in the EU Eco-label.

The results of the analysis of the correlation between the influencing factors and the participation in the two “organizational” environmental activities (ISO14001 and recycling projects) are presented in tables 17 and 18.

### Table 16: Ranks of correlations between the influence given to external factors and the participation in EU-Eco label

<table>
<thead>
<tr>
<th>No.</th>
<th>Independent variable</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Demand of consumers</td>
<td>0.230</td>
</tr>
<tr>
<td>2.</td>
<td>Risk of reputation loss</td>
<td>0.173</td>
</tr>
<tr>
<td>3.</td>
<td>Pressure from NGO’s</td>
<td>0.097</td>
</tr>
<tr>
<td>4.</td>
<td>Government with laws and regulations</td>
<td>0.079</td>
</tr>
</tbody>
</table>

Table 16: Ranks of correlations between the influence given to external factors and the participation in EU-Eco label

A significant positive relation was found (Rho=0.332 and p<0.05) between the factor “government with agreements and covenants” and the use of the environmental management standard ISO14001. This may be explained by the fact that in the past the government stimulated the introduction of environmental management systems like ISO14001. Also, the factors “demand of the consumers”, “the government with laws and regulations”...
"regulations" and "wanting to have a positive image" show a positive, but not significant correlation with the use of ISO14001.

<table>
<thead>
<tr>
<th>No.</th>
<th>External influencing factor</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Request of a shareholder/owner</td>
<td>0.344*</td>
</tr>
<tr>
<td>2.</td>
<td>Wanting to have a positive image</td>
<td>0.288</td>
</tr>
<tr>
<td>3.</td>
<td>Demand of consumers</td>
<td>0.209</td>
</tr>
<tr>
<td>4.</td>
<td>Driven by Competition</td>
<td>0.114</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (p<0.05)

Table 18: Ranks of correlations between the influence given to external factors and the participation in recycling projects

Table 18 shows that the participation in "recycling" project has a significant positive correlation (Rho = 0.344, p < 0.05) with the score given to the "request of a shareholder/owner". Also, the factors "demand of consumer", "wanting to have a positive image" and "driven by competition" appear to have a positive but not significant correlation.

The calculated Spearman’s Rho values (one tailed) of the correlation between the scores given to the eleven external influencing factors concerning the social aspects and the total score for participation in social activities are presented in table 19. The results show that the correlation for participation in social activities with the influence given to the eleven influencing factors is much weaker than it was for environmental activities. Furthermore, the "government with agreements and covenants" and the "request of the shareholder/owner" show a negative, not significant correlation. Only the influence given to the consumer shows a positive, but not significant relation with the participation in the social activities. These results show that giving an external factor a certain level of influence does not mean that a related activity will automatically receive the same level.
Table 19: Ranks of correlations between the influence given to the external influencing factors and the participation in social activities

<table>
<thead>
<tr>
<th>No.</th>
<th>External influencing factor</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Demand of consumers</td>
<td>0.215</td>
</tr>
<tr>
<td>2</td>
<td>Driven by competition</td>
<td>0.089</td>
</tr>
<tr>
<td>3</td>
<td>Demand from partners in supply networks</td>
<td>0.061</td>
</tr>
<tr>
<td>4</td>
<td>Pressure from NGO’s</td>
<td>0.054</td>
</tr>
<tr>
<td>5</td>
<td>Wanting to have a positive image</td>
<td>0.045</td>
</tr>
<tr>
<td>6</td>
<td>Reduction of costs</td>
<td>-0.032</td>
</tr>
<tr>
<td>7</td>
<td>Risk of reputation loss</td>
<td>-0.066</td>
</tr>
<tr>
<td>8</td>
<td>Government with information and subsidies</td>
<td>-0.080</td>
</tr>
<tr>
<td>9</td>
<td>Government with laws and regulations</td>
<td>-0.111</td>
</tr>
<tr>
<td>10</td>
<td>Request of shareholder/owner</td>
<td>-0.161</td>
</tr>
<tr>
<td>11</td>
<td>Government with agreements and covenants</td>
<td>-0.187</td>
</tr>
</tbody>
</table>

Table 19: Ranks of correlations between the influence given to the external influencing factors and the participation in social activities

Analysis were also separately made for the three social activities (BSCI, FWF and SA8000). The results of the four factors with the highest scores are presented in the tables 20-22.

Table 20: Ranks of correlations between the influence given to the external influencing factors and the participation in BSCI

<table>
<thead>
<tr>
<th>No.</th>
<th>External influencing factor</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Demand of consumers</td>
<td>0.183</td>
</tr>
<tr>
<td>2</td>
<td>Demand from partners in supply networks</td>
<td>0.137</td>
</tr>
<tr>
<td>3</td>
<td>Driven by competition</td>
<td>0.123</td>
</tr>
<tr>
<td>4</td>
<td>Pressure from NGO’s</td>
<td>0.060</td>
</tr>
</tbody>
</table>

Table 20: Ranks of correlations between the influence given to the external influencing factors and the participation in BSCI
The correlation is positive, but not significant, for the factor “demand of consumers”. The “pressure from NGO's” shows no correlation. This may be caused by the fact that BSCI is a “business” initiative and NGO's are therefore not directly involved.

<table>
<thead>
<tr>
<th>No.</th>
<th>External influencing factor</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pressure from NGO’s</td>
<td>0.338*</td>
</tr>
<tr>
<td>2.</td>
<td>Wanting to have a positive image</td>
<td>0.310</td>
</tr>
<tr>
<td>3.</td>
<td>Demand from partners in supply networks</td>
<td>0.214</td>
</tr>
<tr>
<td>4.</td>
<td>Government with information and subsidies</td>
<td>0.175</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (p<0.05)

Table 21: Ranks of correlations between the influence given to external factors and the participation in Fair Wear Foundation (FWF)

The correlation between "the pressure from NGO's" and the participation in the Fair Wear Foundation (FWF) appears to be significantly positive (Rho=0.338, p<0.05). The foundation is a multi-stakeholder initiative that includes NGO's within the organization. This may explain why this correlation is significantly positive. The factors "wanting to have a positive image", “demand from partners in supply networks” and “government with information and subsidies” also show a positive, but not significant, correlation with the participation in the Fair Wear Foundation. This may be caused by the fact that this activity is stimulated by supply network partners and the government. Participation in this endeavour positively impacts society's image of the company.

<table>
<thead>
<tr>
<th>No.</th>
<th>Independent variable</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Demand of consumers</td>
<td>0.290</td>
</tr>
<tr>
<td>2.</td>
<td>Driven by competition</td>
<td>0.144</td>
</tr>
<tr>
<td>3.</td>
<td>Request of shareholder/owner</td>
<td>0.043</td>
</tr>
<tr>
<td>4.</td>
<td>Wanting to have a positive image</td>
<td>-0.014</td>
</tr>
</tbody>
</table>

Table 22: Ranks of correlations between the influence given to external factors and the participation in SA8000
Participation in the SA8000 programme shows to have a positive, but not significant, correlation to the influence given to the "demand of consumers". The NGO's and "wanting to have a positive image" do not show a correlation.

5.4.3. CONCLUSIONS

The results of the analysis show no correlation between the external influencing factors and the knowledge of and participation in sustainability activities in general.

The strongest significant positive relation that was found between the influencing factors and participation in environmental activities was that of the influence given to “the demand of the consumer”. This factor also had a positive, but not significant in this relatively small sample, correlation to the social activities. Thus, it can be concluded that companies that feel the demand of the consumer as an important factor generally participate more in environmental activities than companies that give the influence of the consumer a lower score.

However, analysis at the level of individual environmental activities shows that it is not the demand of the consumer that is significant but it is the influence given to the “request of the shareholder/owner” that has a significant positive correlation with two environmental activities. These activities are the participation in the GOTS (organic cotton) certification and the participation in Recycling projects.

The level of influence given to the different governmental policies appears to be very ambivalent to the social and environmental activities. No positive correlation was found between social activities and the influence given to any of the mentioned policies. Correlation between environmental activities and the governmental policies was consistently positive but was only significant for one environmental activity. This activity is the use of Environmental Management Systems (ISO14001) and the factor was the “government with agreements and covenants”. This can be explained by the fact that the introduction of Environmental Management Systems has, in the past, been stimulated by the government in covenants with the industrial sectors.

Analysis at the level of the individual social activities show that participation in the programme of the Fair Wear Foundation has a positive significant correlation with the influence given to the “pressure of the NGO’s”. This may be caused by the fact that NGO’s are part of this multi-stakeholder initiative.

Also, the factors “wanting to have a positive image” and the “demand from supply network partners” have a positive but insignificant correlation with participation in several environmental and social activities.

To understand the factors that influence the decisions made for participation in sustainability activities, in addition to the general characteristics (like size) and the external pressure, the innovation characteristics were described in chapter two. The relations between these innovation characteristics and the participation in sustainability activities are presented in 5.5.
5.5. **INNOVATION CHARACTERISTICS AND PARTICIPATION IN SUSTAINABILITY ACTIVITIES**

5.5.1. **INTRODUCTION**
To test the relationship between the scores given to the innovation characteristics and the acquaintance with and participation in sustainability activities, statistical analysis have been used. These analysis were conducted using the Spearman’s Rho, one-tailed, at various levels. The total scores for both the activities and the innovation characteristics have been used, as well as the scores at category-levels and at individual statement and separate activity levels.

5.5.2. **INNOVATION CHARACTERISTICS**
As mentioned in chapter 2, the innovation characteristics of a company are seen as important factors influencing the sustainability strategy and related activities found. The framework presented states that the external pressure explains why companies develop a sustainability strategy and join sustainability activities. However, the innovation characteristics may explain which strategy and related activities will be selected.

The innovation characteristics selected were explained in section 2.5 and the method used to measure the innovation characteristics in the empirical research was explained in section 3.3. As mentioned in this section, the questionnaire contained thirty statements classified in six categories. The respondents were asked to give a score between 1 and 5 (1 = low, 5 = high) to what extent the statement described the situation in their organization and supply network. The six categories each containing five statements and were: external orientation; cooperation; learning; leadership; autonomy; result driven. The list of statements can be found in table 23 and appendix I.

Ten statements contain italic words and the scores given to these statements were recoded afterwards. In tables 25 to 34, the number of the individual statement together with a short description of the most important content (underlined in table 23) is used to refer to the statement. In these tables, the total scores for all thirty statements (Total Innovation Capacity) and the separate total scores for the six categories (Total Category “…….”) are also presented.
<table>
<thead>
<tr>
<th>Category</th>
<th>Nr.</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Orientation</strong></td>
<td>1</td>
<td>the organization has <strong>insight in the developments and trends in the fashion and clothing sector</strong></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>employees of the organization have <strong>hardly direct contact</strong> with clients, supplies and partners</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>the organization wishes to present itself <strong>active in and around the sector</strong> in debates, media and conferences</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>the organization <strong>compares itself</strong> with others concerning functioning and performance</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>the organization does <strong>not address sensitive topics</strong> in the sector</td>
</tr>
<tr>
<td><strong>Cooperation</strong></td>
<td>6</td>
<td>different departments/disciplines within the organization <strong>work together</strong> on common goals</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>the organization has <strong>little knowledge over the goals</strong> and the functioning of the partners in the supply network</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>the future policy of the organization will be developed in <strong>cooperation with partners</strong> in the supply network</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>there is a great <strong>trust</strong> among the organization and the partners in the supply network</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>electronic databases are <strong>not or hardly linked</strong> with databases outside the organization</td>
</tr>
<tr>
<td><strong>Learning</strong></td>
<td>11</td>
<td>mistakes are seen as <strong>learning moments</strong> are made visible and used to develop structural improvements</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>the organization implements <strong>slowly and hardly ever fully</strong> the “plan, do, check act” circle</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>education and training are used to increase the autonomy of the employees and to strengthen the bilateral communication skills</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>taking initiative and showing flexibility belong to the most important criteria by recruitment and the development of employees</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>the organization <strong>hardly ever participates</strong> in pilot-projects concerning new methods for assessing processes and products</td>
</tr>
<tr>
<td><strong>Leadership</strong></td>
<td>16</td>
<td>managers inspire and motivate employees by setting the good example</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>managers protect employees and reduce unnecessary bureaucracy and overhead</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>management develops the learning capacity of the organization and reserves means in the budget to support this</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>the management is <strong>hardly prepared to accept risks</strong></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>the management bases the success of the organization on <strong>the added value</strong> to society by the organization</td>
</tr>
<tr>
<td><strong>Autonomy</strong></td>
<td>21</td>
<td>employees are being treated as internal partners</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>the organization provides the opportunities for unconventional methods for cooperation and development</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td><strong>only limited</strong> means and time are available for innovation. The organization is hardly prepared to invest in it</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>unnecessary rules and juridical barriers will as much as possible be removed and reduced</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>the organization has a relative horizontal organizational structure</td>
</tr>
<tr>
<td><strong>Result Driven</strong></td>
<td>26</td>
<td>the organization shows <strong>only limited accountability</strong> about the results, priorities and learning effects</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>employees clearly contribute to the organizational goals at the long term</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>the organization involves by the assessment of the result also the added value for the network partners</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>the organization judges their results in relation to the front runners in the sector. It always uses good operating practical examples from other organizations</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>the organization uses future scenarios to determine her effectiveness for the long term</td>
</tr>
</tbody>
</table>

Table 23. Thirty statements representing the six categories of innovation characteristics used in the survey
The calculated score levels for the six innovation categories and the total innovation capacity score are presented in table 24 and 29 of the respondents gave scores to all the thirty statements. The results presented are based on these 29 respondents (N=29).

<table>
<thead>
<tr>
<th>Score levels of the innovation categories</th>
<th>5-10 (low)</th>
<th>10-15 (average)</th>
<th>15-20 (medium)</th>
<th>20-25 (high)</th>
</tr>
</thead>
<tbody>
<tr>
<td>External orientation</td>
<td>-</td>
<td>9</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Cooperation</td>
<td>-</td>
<td>12</td>
<td>17</td>
<td>-</td>
</tr>
<tr>
<td>Learning</td>
<td>-</td>
<td>4</td>
<td>23</td>
<td>2</td>
</tr>
<tr>
<td>Leadership</td>
<td>-</td>
<td>5</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td>Autonomy</td>
<td>-</td>
<td>3</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>Result Driven</td>
<td>1</td>
<td>9</td>
<td>19</td>
<td>-</td>
</tr>
<tr>
<td>Innovation capacity total score</td>
<td>30-60</td>
<td>60-90</td>
<td>90-120</td>
<td>120-150</td>
</tr>
<tr>
<td>N=29</td>
<td>--</td>
<td>3</td>
<td>25</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 24: Number of the respondents and the scores given to the six categories of the innovation characteristics and the total innovation capacity score

For each of the six categories, the theoretical score (after correction) could potentially be a minimum of 5 and a maximum of 25. The total score determines the level of innovation capacity of the individual respondent. The theoretical lowest total-score could be 30 (when all statements are scored low = 1) and the theoretical highest total-score could be 150 (when all statements are scored high = 5). The results in table 24 show that the total-scores of the respondents vary between 80 and 130.

The variety of the scores given by the respondents to the six categories of the innovation characteristics show an adequate variety between average and medium scores. No low scores were found and only a few high scores were present. After aggregating the scores, the statistics suggest that the respondents have average to medium innovation capacity total-scores. Only one of them scored highly.

5.5.3. SUSTAINABILITY ACTIVITIES AND THE INNOVATION CHARACTERISTICS
As a start the correlation between the total score for sustainability activities as explained in section 5.2 and the scores given to the statements for measuring the innovation characteristics was analysed. This was done at three levels (individual statement, total of a
category and the total innovation capacity), as explained in section 5.5.2. The results are shown in table 25.

<table>
<thead>
<tr>
<th>No.</th>
<th>Innovation Characteristic</th>
<th>Spearman's Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total Category External Orientation</td>
<td>0.317*</td>
</tr>
<tr>
<td>2</td>
<td>St. 5. Address sensitive topics</td>
<td>0.308</td>
</tr>
<tr>
<td>3</td>
<td>Total Innovation Capacity.</td>
<td>0.300</td>
</tr>
<tr>
<td>4</td>
<td>St.1. Insight in the developments and trends</td>
<td>0.299</td>
</tr>
<tr>
<td>5</td>
<td>St.4. Compares itself with others</td>
<td>0.212</td>
</tr>
<tr>
<td>6</td>
<td>St.3. Active in and around the sector</td>
<td>0.168</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (p<0.05)

Table 25: Ranks of correlations between the scores given to innovation characteristics and the participation in sustainability activities

The total score for the innovation capacity has a positive but not significant correlation with the participation in sustainability activities.

Only the total score for the category “external orientation” appears to have a significant positive correlation (Rho=0.317, p<0.05) with the participation in sustainability activities. Four out of five of the individual statements in this category “external orientation” also show a positive but not significant relation. These statements concern addressing sensitive topics, the insight in recent developments and trends, comparing itself with others and being active in and around the sector.

Based on a forward approach, a multiple regression analysis was performed to identify key factors from the different innovation characteristics. To do this the variables had to be treated as ratio level figures.

Within the sustainability activities, only two innovation characteristics explain together 28.2% (adjusted R² 22.7%) of the variation in the level of participation in sustainability activities. These two characteristics are statement 1 “the insight in the developments and trends in the fashion and clothing sector” and statement 19, "if the management is prepared to accept risks”.

These findings do not support the idea presented in chapter 2, that a higher level of innovation capacity in general will have a positive correlation with the participation in “sustainability” activities. However, it does show that a significant positive correlation occurs with some specific innovation characteristics related to the category “external orientation”.

76
As mentioned before, the “sustainability” activities are the combination of the “social” and “environmental” activities. In the next sections 5.5.4 and 5.5.5 they are analysed separately and at different levels.

5.5.4. THE SOCIAL ACTIVITIES AND THE INNOVATION CHARACTERISTICS

The relationship between the total score for participation in the social activities (being three of the sustainability activities) and the different levels of the scores given the innovation characteristics was analysed secondly. The results are shown in table 26.

<table>
<thead>
<tr>
<th>No.</th>
<th>Innovation Characteristic</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>St.1.Insight in the developments and trends</td>
<td>0.504**</td>
</tr>
<tr>
<td>2</td>
<td>Total Innovation Capacity</td>
<td>0.451**</td>
</tr>
<tr>
<td>3</td>
<td>Total Category External Orientation</td>
<td>0.440**</td>
</tr>
<tr>
<td>4</td>
<td>St. 5. Address sensitive topics</td>
<td>0.431**</td>
</tr>
<tr>
<td>5</td>
<td>Total Category Cooperation</td>
<td>0.364*</td>
</tr>
<tr>
<td>6</td>
<td>Total Category Result Driven</td>
<td>0.250</td>
</tr>
<tr>
<td>7</td>
<td>St. 6. Departments/disciplines work together</td>
<td>0.207</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (p<0.01)
* Correlation is significant at the 0.05 level (p<0.05)

Table 26: Ranks of correlations between the scores given to innovation characteristics and the participation in social activities

These results show a significant positive relation (Rho=0.451, p<0.01) between the total innovation capacity score and the total participation in social activities. This confirms that companies with a higher innovation capacity are acquainted with and join more social activities than companies with a lower innovation capacity.

Also, the total score for the category external orientation of the innovation characteristics shows to have a significant positive correlation (Rho=0.440, p<0.01) with the total participation in social activities together with two separate statements of this category. These statements concern having insight in the developments and trends in the sector (Rho=0.504, p<0.01) and addressing sensitive topics (Rho=0.431, p<0.01). As well, the total
score for the category cooperation of the innovation characteristics shows a significant positive correlation (Rho=0.364, p<0.05) with the participation in social activities.

As previously indicated, the score for all social activities contains three social activities. They are the Business Social Compliance Initiative (BSCI), the Fair Wear Foundation (FWF) and the SA8000 (Social Accountability). To find out which of these three activities showed the strongest relation to the innovation characteristics, all three have been separately analysed with the scores of the individual statements, the six categories and total innovation capacity. The results are presented in this order in tables 27, 28 and 29.

<table>
<thead>
<tr>
<th>No.</th>
<th>Innovation characteristic</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>St.1. Insight in the developments and trends</td>
<td>0.547**</td>
</tr>
<tr>
<td>2</td>
<td>Total Category External Orientation</td>
<td>0.491**</td>
</tr>
<tr>
<td>3</td>
<td>St. 5. Address sensitive topics</td>
<td>0.484**</td>
</tr>
<tr>
<td>4</td>
<td>Total Innovation Capacity</td>
<td>0.429*</td>
</tr>
<tr>
<td>5</td>
<td>Total Category Cooperation</td>
<td>0.422*</td>
</tr>
<tr>
<td>6</td>
<td>St.6. Departments/ disciplines work together</td>
<td>0.394*</td>
</tr>
<tr>
<td>7</td>
<td>St.8. Cooperation with partners in the supply network</td>
<td>0.380*</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (p<0.01)
* Correlation is significant at the 0.05 level (p<0.05)

Table 27: Ranks of correlations between the scores given to innovation characteristics and the participation in the Business Social Compliance Initiative (BSCI)

The total score for innovation capacity (Rho=0.429, p<0.05), the category “external orientation” (Rho=0.491, p<0.01) and the category “cooperation” (Rho=0.422, p<0.05) show a significant positive relation with the participation in the BSCI programme.

Additionally, four individual statements (two of each category mentioned) show a significant positive correlation with participation in the BSCI programme. These statements concern insight in developments and trends (Rho=0.547, p<0.01), addressing sensitive topics (Rho=0.484, p<0.01), working together of departments/ disciplines (Rho=0.394, p<0.05) and cooperation with partners in the supply network (Rho=0.380, p<0.05).
Correlation is significant at the 0.05 level (p<0.05)

Table 28: Ranks of correlations between the scores given to innovation characteristics and the participation in the Fair Wear Foundation (FWF)

<table>
<thead>
<tr>
<th>No</th>
<th>Innovation characteristic</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>St.10. Databases linked with databases outside the organization</td>
<td>0.421*</td>
</tr>
<tr>
<td>2</td>
<td>St. 6. Departments/ disciplines work together</td>
<td>0.390*</td>
</tr>
<tr>
<td>3</td>
<td>Total Innovation Capacity</td>
<td>0.267</td>
</tr>
<tr>
<td>4</td>
<td>St. 5. Address sensitive topics</td>
<td>0.234</td>
</tr>
<tr>
<td>5</td>
<td>St. 4. Compares itself with others</td>
<td>0.207</td>
</tr>
<tr>
<td>6</td>
<td>Total Category Cooperation</td>
<td>0.193</td>
</tr>
<tr>
<td>7</td>
<td>Total Category External Orientation</td>
<td>0.180</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (p<0.05)

The total innovation capacity has a positive (but not significant) correlation with the participation in the Fair Wear Foundation. Two scores given to individual innovation characteristics show a significant positive correlation. These characteristics represent the linking of own databases with databases outside the organization (Rho=0.421, p<0.05) and the cooperation between departments/disciplines (Rho=0.390, p<0.05).
Correlation is significant at the 0.05 level (p<0.05)

Table 29: Ranks of correlations between the scores given to the innovation characteristics and the participation in the SA8000 (Social Accountability)

<table>
<thead>
<tr>
<th>No.</th>
<th>Innovation characteristic</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>St.17. managers protect employees and reduce unnecessary bureaucracy</td>
<td>0.417*</td>
</tr>
<tr>
<td>2</td>
<td>St.1. insight in the developments and trends</td>
<td>0.318*</td>
</tr>
<tr>
<td>3</td>
<td>Total Category Leadership</td>
<td>0.201</td>
</tr>
<tr>
<td>4</td>
<td>St. 20. the added value to society</td>
<td>0.111</td>
</tr>
<tr>
<td>5</td>
<td>Total Innovation Capacity</td>
<td>0.106</td>
</tr>
<tr>
<td>6</td>
<td>Total Category External Orientation</td>
<td>0.094</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (p<0.05)

The analysis for the SA 80000 show that the score representing the total innovation capacity has no correlation with the participation in this activity but that the scores given to two individual characteristics do. These characteristics are, if “managers protect employees by reducing unnecessary bureaucracy” (Rho=0.417,p<0.05) and again, “the insight the company has in the developments and trends in the sector” (Rho=0.318, p<0.05).

Based on a forward approach a multiple regression analysis was performed to identify key factors of the different innovation characteristics. To do this the variables were treated as ratio level figures. The analysis for the activity BSCI three characteristics together explain 50.8 % (adjusted $R^2$ 45.0 %) of the variation in the level of participation. One of these three characteristics was again the “insight in the developments and trends in the sector”. The other two characteristics are if “the future policy will be developed in cooperation with partners in the supply network” and if “the organization addresses sensitive topics in the sector”.

For participation in the Fair Wear Foundation, four characteristics combine to explain 60.6 % (adjusted $R^2$ 54.1 %) of the variation. These four statements are: “the linkage between their own electronic databases with databases outside the organization”; “if employees of the organization have direct contact with clients, supplies and partners outside the organization”; if “the company addresses sensitive topics in the sector” and if “employees are being treated as internal partners”.

80
Conclusions
The results of these analysis show that the level of the innovation capacity in the focal company and its supply network has a significant positive correlation with the participation in activities for improving the social aspects in the supply network. This conclusion supports the assumption in the framework presented in chapter two, that focal companies will join activities more when they have the capability in their organization to do so. The external pressure explains why they should act, but the innovation characteristics explains if and how they will act.

Important characteristics as elements of the innovation capacity that have the highest significant correlation are:

- the insight the organization has in recent developments and trends in the clothes and fashion sector
- daring to address sensitive topics in the sector
- if departments/disciplines in the organization work together
- if there is a linkage between their own electronic databases with databases outside the organization;
- if employees of the organization have direct contact with clients, supplies and partners outside the organization;
- if employees are being treated as internal partners

The conclusions support the statement that companies will need insight, leadership and the organizational capability before they will develop a pro-active strategy and join activities for improving social aspects in their supply network.

5.5.5. THE ENVIRONMENTAL ACTIVITIES AND THE INNOVATION CHARACTERISTICS
In addition to the analysis for the social activities as presented in 5.5.4, the correlation between the total score for participation in environmental activities and the different levels of the scores given to the innovation characteristics was analyzed. The results are ranked in table 30.

<table>
<thead>
<tr>
<th>No.</th>
<th>Innovation characteristic</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total Category External Orientation</td>
<td>0.144</td>
</tr>
<tr>
<td>2</td>
<td>St.3. active in and around the sector</td>
<td>0.135</td>
</tr>
<tr>
<td>3</td>
<td>St.1. insight in the developments and trends</td>
<td>0.135</td>
</tr>
<tr>
<td>4</td>
<td>St.5. address sensitive topics</td>
<td>0.115</td>
</tr>
<tr>
<td>5</td>
<td>Total Innovation capacity</td>
<td>0.099</td>
</tr>
</tbody>
</table>

Table 30: Ranks of correlations between the scores given to the innovation characteristics and the participation in environmental activities
As illustrated by table 30, no correlation was found with the total innovation capacity. Some characteristics belonging to the category “external orientation” show a weak positive correlation but they are not significant.

The total score for environmental activities contains five environmental activities from which two are related to the organization (ISO14001 and Recycling) and three to the product and material (GOTS, EU-Eco label, EKO). The relationship between the innovation characteristics and the individual environmental activities was also analysed. The results of these analysis are presented in five separate tables.

Table 31 shows the ranks of the correlation for five innovation characteristics with the participation in ISO14001. The score for the total innovation capacity shows a positive but insignificant correlation. Also, the total score for characteristics belonging to the category "external orientation", shows a positive but not a significant correlation. Furthermore, some individual characteristics concerning leadership and external orientation show a weak positive correlation, but again they are not significant.

<table>
<thead>
<tr>
<th>No.</th>
<th>Innovation characteristic</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>St.16. managers inspire and motivate</td>
<td>0.307</td>
</tr>
<tr>
<td>2</td>
<td>Total Innovation Capacity</td>
<td>0.275</td>
</tr>
<tr>
<td>3</td>
<td>Total Category External Orientation</td>
<td>0.251</td>
</tr>
<tr>
<td>4</td>
<td>St.1. insight in the developments and trends</td>
<td>0.224</td>
</tr>
<tr>
<td>5</td>
<td>St.3. active in and around the sector</td>
<td>0.190</td>
</tr>
</tbody>
</table>

Table 31: Ranks of correlations between the scores given to the innovation characteristics and the participation in ISO14001
The results of the calculated correlation between the scores given to the innovation characteristics and the participation in recycling projects are ranked in table 32.

<table>
<thead>
<tr>
<th>No</th>
<th>Innovation characteristic</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>St.1. insight in the developments and trends</td>
<td>0.313*</td>
</tr>
<tr>
<td>2</td>
<td>St.17. managers protect employees and reduce unnecessary bureaucracy</td>
<td>0.281</td>
</tr>
<tr>
<td>3</td>
<td>St.16. managers inspire and motivate</td>
<td>0.221</td>
</tr>
<tr>
<td>4</td>
<td>Total Innovation Capacity</td>
<td>0.219</td>
</tr>
<tr>
<td>5</td>
<td>St.3. the learning capacity of the organization</td>
<td>0.171</td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.05 level (p<0.05)

Table 32: Ranks of correlations between the scores given to the innovation characteristics and the participation in Recycling projects

The total innovation capacity shows a positive but insignificant correlation with the participation in recycling projects. Only one characteristic, “the insight the company has in the developments and trends in the sector”, shows a significant positive correlation (Rho=0.313, p<0.05) with participation in recycling projects. Recycling projects are increasingly seen as highly important for the future of the clothing industry. Therefore, it is logical that companies with good insight into the developments and trends in the sector join these projects more often.
The results of the calculated correlation between the scores given to the innovation characteristics and the participation in the GOTS program for organic cotton are ranked in table 33.

<table>
<thead>
<tr>
<th>No.</th>
<th>Innovation characteristic</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>St. 27. employees clearly contribute to the organizational goals at the long term</td>
<td>0.312*</td>
</tr>
<tr>
<td>2</td>
<td>St.26. accountability about the results, priorities and learning effects</td>
<td>0.270</td>
</tr>
<tr>
<td>3</td>
<td>Total Category Result Driven</td>
<td>0.207</td>
</tr>
<tr>
<td>4</td>
<td>St.13. autonomy of the employees and to strengthen the bilateral communication skills</td>
<td>0.137</td>
</tr>
<tr>
<td>5</td>
<td>St.30. uses future scenarios</td>
<td>0.074</td>
</tr>
<tr>
<td>6</td>
<td>Total Innovation Capacity</td>
<td>0.012</td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.05 level (p<0.05)*

Table 33: Ranks of correlations between the scores given to the innovation characteristics and the participation in the GOTS programme

The result calculated for the total innovation capacity shows no correlation with the participation in the GOTS programme. The characteristic concerning employees contributing to the organizational goals in the long term does (Rho=0.312, p<0.05). Other characteristics that belong to the category “result driven” also show a positive but not significant relation to the participation in the GOTS programme.

In table 34 one positive and three negative results of the calculated correlation between the scores given to the innovation characteristics and the participation in EU Ecolabel are ranked together with the total innovation capacity score.

The total innovation capacity shows no correlation. The characteristic “being active in and around the sector” does show a positive but not significant correlation. The significant negative correlations of the characteristics “knowledge over partners in the supply network” (Rho= -0.313, p<0.05 ) and “accepting risks” (Rho= -0.339, p<0.05) are surprising. Respondents suggest that these characteristics have a negative influence on the decision to use the EU-Ecolabel.
Table 34: Ranks of correlations between the scores given to the innovation characteristics and the participation in EU-Eco label

<table>
<thead>
<tr>
<th>No</th>
<th>Innovation characteristic</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>St.3. active in and around the sector</td>
<td>0.296</td>
</tr>
<tr>
<td>2</td>
<td>Total Innovation Capacity</td>
<td>-0.078</td>
</tr>
<tr>
<td>9</td>
<td>St.2. direct contact with clients, supplies and partners</td>
<td>-0.307</td>
</tr>
<tr>
<td>10</td>
<td>St.7. knowledge over partners in the supply network</td>
<td>-0.313*</td>
</tr>
<tr>
<td>11</td>
<td>St.19. accept risks</td>
<td>-0.339*</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (p<0.05)

In table 35, one positive and three negative results of the calculated correlation between the scores given to the innovation characteristics and the participation in the EKO certification are ranked together with the total innovation capacity score.

Table 35: Ranks of correlations between the scores given to the innovation characteristics and the participation in EKO certification

<table>
<thead>
<tr>
<th>No</th>
<th>Innovation characteristic</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>St. 26. accountability about the results, priorities and learning effects</td>
<td>0.249</td>
</tr>
<tr>
<td>2</td>
<td>Total Innovation Capacity</td>
<td>-0.035</td>
</tr>
<tr>
<td>7</td>
<td>St.15. participates in pilot-projects</td>
<td>-0.251</td>
</tr>
<tr>
<td>8</td>
<td>St.8. cooperation with partners in the supply network</td>
<td>-0.460*</td>
</tr>
<tr>
<td>9</td>
<td>Total Category Cooperation</td>
<td>-0.478*</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (p<0.05)

The result for the total innovation capacity shows no relation to participation in the EKO certification. Only one characteristic concerning “the accountability about the results, priorities and learning effects” shows a positive but not significant correlation.
The total for the category cooperation shows a significant negative correlation (Rho= -0.478, p<0.05) and also the characteristic concerning the “cooperation with partners in the supply network” shows to have a significant negative correlation.

Conclusions

In summary, no significant correlation was found between the innovation characteristics and the participation in the environmental activities in general. Only the participation in recycling projects and the participation in the GOTS (organic cotton) programme show a significant positive relation with the characteristics “insight in the developments and trends” and that the “employees clearly contribute to the organizational goals at the long term”.

Some innovation characteristics concerning “accepting risks” and “cooperation with partners in the supply network” show a significant negative correlation with participation in the EU Ecolabel and EKO. No explanation could be found for this result.

5.5.6. Conclusions
The results of the analysis in section 5.5.4 show that the score representing the total innovation capacity has a significant relation with the acquaintance with and participation in social activities. Also, the calculations for the individual social activities gave several significant positive correlations.

Dominant characteristics are:

- dependency of the partners in the supply network
- the insight the organization has in recent developments and trends in the sector
- daring to address sensitive topics
- working together by departments/ disciplines
- cooperation with partners in the supply network
- linkage of electronic databases with databases outside the organization
- managers protect employees and reduce unnecessary bureaucracy and overhead

These results support the framework presented in chapter two (for social activities) that stated that the total innovation capacity will have to be at a certain level before companies can and will join sustainability (social) activities.

This same clear significant positive correlation was not found with regards to the environmental activities (section 5.5.5). The calculations for the participation in individual activities for recycling and the use of organic cotton alone showed a significant positive correlation with two characteristics.

These two characteristics were:

- the insight the organization has in the recent developments and trends in the sector
- employees clearly contribute to the organizational goals at the long term.

The first characteristic also proved to be strongly related to the participation in the social activities but other characteristics mentioned for the social activities do not show this correlation for the environmental activities.
Concluded is that the significant correlation of the innovation characteristics of a focal company with the participation in social activities in the supply network is different for the participation in the environmental activities. The case studies were conducted to go deeper into these differences. The results can be found in chapter 6.

5.6. INFLUENCE OF DIFFERENT FACTORS ON THE PARTICIPATION IN SUSTAINABILITY ACTIVITIES

5.6.1. INTRODUCTION
This dissertation focuses specifically on the relation between the innovation characteristics of the focal company and the participation in social and environmental activities. However, general characteristics of the focal company and the external influencing factors also prove to influence the participation in these activities. For this reason a total regression was used to determine to what extend these different characteristics and factors can explain the total participation of a company in social and environmental activities. The results of the calculations are presented in section 5.6.2.

As previously mentioned, respondents to the conducted survey were asked to give scores indicating to what level external factors influence both the social and environmental aspects. Participants were also asked to give scores to thirty statements concerning innovation characteristics. To test if companies with a higher innovation capacity would give higher scores to certain external influencing factors this relation was also analysed. The results are presented in section 5.6.3.

The different relations between the external influencing factors, general and innovation characteristics of the focal company and the activities being part of the sustainability strategy are shown in figure 6.

Figure 6: The relation between characteristics of the focal company, the external influencing factors and the participation in social and environmental activities in the supply network
5.6.2. CHARACTERISTICS OF THE COMPANY, THE EXTERNAL INFLUENCING FACTORS AND PARTICIPATION IN SUSTAINABILITY ACTIVITIES

Social and environmental strategies and related activities found in companies will in practice be caused by general characteristics, the influencing factors and the innovation characteristics combined. In order to test the influence of these three dimensions on the participation in activities, total regression analysis was conducted. To do this all the variables were treated as ratio level figures. When the calculation showed that all variables were excluded, the results are not presented here.

The results for the social activities show that the “turnover” together with one of the innovation characteristics of the category leadership explains 36.5 % (adjusted R² 31.6%) of the variation. This innovation characteristic concerning leadership was “management basing the success of the organization on the added value to society by the organization”. The results for BSCI, a component of the social activities, show that three innovation characteristics together with one of the external influencing factors and the turnover combined explain 68.7% (adjusted R² 61.9%) of the variation. The impacts of the other innovation characteristics and the external factors were low. The results for FWF showed that four innovation characteristics together explain 60.6 % (adjusted R² 54.1%) of the variation.

The same analysis for the environmental activities show that the influence given to the consumer explains 18.1 % (adjusted R² 15.1%). The results for using the GOTS certification was that two external influencing factors together with one of the innovation characteristics explain 51.2% (adjusted R² 45.4%) of the variation. The external influencing factors were concerning the demand of the shareholders and wanting to have a positive image. The results for the environmental activities EU-Ecolabel, EKO and Recycling show that different innovation characteristics explain only low percentages (<15%) and that the external factors and the turnover were excluded.

5.6.3. THE INNOVATION CHARACTERISTICS AND THE EXTERNAL INFLUENCING FACTORS

The scores respondents gave to the eleven external factors influencing the participation in sustainability activities may be related to the innovation characteristics. Less innovative companies may, for instance, give the government a stronger role while companies with a higher level of innovation may be more focussed on the influencing factors of the market.
The correlation between the influence given to external factors concerning social activities and the total innovation capacity scores are calculated Spearman’s Rho, one-tailed presented in table 36.

<table>
<thead>
<tr>
<th>No.</th>
<th>External influencing factor</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wanting to have a positive image</td>
<td>0.396 *</td>
</tr>
<tr>
<td>2</td>
<td>Request of a shareholder/owner</td>
<td>0.251</td>
</tr>
<tr>
<td>3</td>
<td>Government with laws and regulations</td>
<td>0.242</td>
</tr>
<tr>
<td>4</td>
<td>Government with information and subsidies</td>
<td>0.164</td>
</tr>
<tr>
<td>5</td>
<td>Demand of consumers</td>
<td>0.079</td>
</tr>
<tr>
<td>6</td>
<td>Risk of reputation loss</td>
<td>0.074</td>
</tr>
<tr>
<td>7</td>
<td>Reduction of costs</td>
<td>0.072</td>
</tr>
<tr>
<td>8</td>
<td>Government with agreements and covenants</td>
<td>0.027</td>
</tr>
<tr>
<td>9</td>
<td>Demand form partners in the supply network</td>
<td>0.021</td>
</tr>
<tr>
<td>10</td>
<td>Driven by competition</td>
<td>-0.065</td>
</tr>
<tr>
<td>11</td>
<td>Pressure from NGO’s</td>
<td>-0.024</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (p<0.05)

Table 36: Ranks of correlations between the influence given to external factors concerning social activities and the total innovation capacity score
The correlation between the influence given to external factors concerning environmental activities and the total innovation capacity scores are presented in the table 37.

<table>
<thead>
<tr>
<th>No.</th>
<th>External influencing factors</th>
<th>Spearman’s Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wanting to have a positive image</td>
<td>0.505**</td>
</tr>
<tr>
<td>2</td>
<td>Demand of consumers</td>
<td>0.315*</td>
</tr>
<tr>
<td>3</td>
<td>Driven by competition</td>
<td>0.278</td>
</tr>
<tr>
<td>4</td>
<td>Government with laws and regulations</td>
<td>0.209</td>
</tr>
<tr>
<td>5</td>
<td>Request of a shareholder/owner</td>
<td>0.208</td>
</tr>
<tr>
<td>6</td>
<td>Pressure from NGO’s</td>
<td>0.183</td>
</tr>
<tr>
<td>7</td>
<td>Risk of reputation loss</td>
<td>0.163</td>
</tr>
<tr>
<td>8</td>
<td>Government with information and subsidies</td>
<td>0.145</td>
</tr>
<tr>
<td>9</td>
<td>Demand form partners in the supply network</td>
<td>0.136</td>
</tr>
<tr>
<td>10</td>
<td>Reduction of costs</td>
<td>0.111</td>
</tr>
<tr>
<td>11</td>
<td>Government with agreements and covenants</td>
<td>0.108</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (p<0.05)

Table 37: Ranks of correlations between the influence given to external factors concerning environmental activities and the total innovation capacity score

These results show that the scores given to “wanting to have a positive image” for both the social aspects (Rho=0.396, p<0.05) and the environmental aspects (Rho=0.434, p<0.05) are significantly related to the total innovation capacity score. The factors “consumer”, “shareholder” and “government with regulations” also show a positive, but not significant relation to the total innovation capacity score.

5.6.4. CONCLUSIONS

Multiple regression analysis shows that the turnover of the company, being one of the general characteristics, explains the highest part of the variation concerning the participation in social activities. Therefore, companies that have a higher turnover more frequently join social activities in their supply network. Secondly, not the external influencing factors but several internal innovation characteristics of the company explain the variation. This is in line with the results described in section 5.5.4 about the positive significant relation between the level of innovation capacity and the participation in social activities.
The same analysis for participation in environmental activities show no relation with the turnover and the external influencing factor “demand of consumers” explains the highest percentage of the variation. Secondly, several innovation characteristics explained the variation for the environmental activities. An exception to this is the participation in the environmental GOTS certification programme where the external influencing factors “demand of the shareholders” and “wanting to have a positive image” explained a large percentage of the variation.

In addition to this, the relation between the influence given to eleven external factors for the social and the environmental activities and the total innovation capacity scores was analysed. The results show that the external influencing factor “wanting to have a positive image” has a significant positive relation with the level of the total innovation capacity. Therefore, companies with a high innovation capacity recognise the importance of a positive image as external influencing factor more than companies with a lower innovation capacity. Also, the pressure from consumers, stakeholders and the government are more often recognised as important external influencing factors by companies with a higher total innovation capacity score. This is in line with the conclusion in sections 5.5.4 and 5.5.5 that the category “external orientation” from the internal innovation characteristics shows to have the strongest relation with participation in sustainability (social) activities.

These results show that internal innovation characteristics (in addition to turnover and some external influencing factors) are often related to the participation in social and environmental activities. Differences in these relations are found between the social versus the environmental activities and also for specific individual activities.

To get more insight into these differences, case studies were conducted. The results are presented in chapter 6.
CHAPTER 6. UNDERSTANDING CLOTHING COMPANIES DECISION MAKING PROCESS CONCERNING A STRATEGY FOR SUSTAINABILITY IN THEIR SUPPLY NETWORK

6.1. INTRODUCTION

This chapter presents the results of the third phase of research conducted concerning sustainability strategies in industrial clothing supply networks.

The initial phase focussed on the theoretical component of the implementation process of sustainability in the supply networks. Based on a literature review, a new conceptual framework was developed and presented in chapter 2. This framework states that the innovation characteristics of the focal company will be related to the sustainability strategies found.

In the second phase, the framework was tested by a quantitative survey, using an on-line questionnaire. The relation of the different (innovation) characteristics of the clothing focal company and its supply network with the implementation strategy for sustainability and related activities found was analysed. The results show some significant positive relations for the social activities but not for the environmental activities. The analysis of these results was presented in chapter 5.

However, the question of how the strategies and activities found had been developed and how the decisions were made to participate in certain sustainability activities could not be answered by the results of the quantitative survey. Also, the differences found between the relation of the innovation characteristics to the social and environmental strategies could not be explained. Assumed is that the decision making process for developing a strategy concerning the social aspects may be influenced by different factors and actors than the process concerning the environmental aspects does.

To answer these questions, the third phase of the research case-studies were conducted. The aim was to gain more insight into the decision making process concerning the selected sustainability strategies. Case studies have proven to be the most appropriate research method when limited control over the ongoing circumstances is possible and the behaviour of the actors based on their characteristics cannot be influenced (Yin, 2013; Dul and Hak, 2008).

The case study research is explorative. The cases selected are all front runners and they are practicing sustainability activities well beyond legislation. They have joined different voluntary sustainability activities in their supply network. They are medium sized or big “focal” clothing companies but they do differ in type of clothes, target groups and organization structure. They also differ concerning the participation in the wide variety of sustainability activities in the sector. The selected cases have not been analysed on integral sustainability activities but on the distinguished isolated social and environmental strategies and the decision making processes concerning either joining or not joining these activities. The general characteristics of the four selected cases are presented in section 6.2.
A literature review was used to determine the relevant aspects for reconstructing and analysing the decision making process for the social and environmental activities in their supply network. The results of this literature review are discussed and the selected Contextual Interaction Theory (Bressers, 2009) is presented and explained in section 2.6.

Information in public available annual reports, vision and strategic plans, often published on their websites, concerning sustainability and CSR from the company itself was analysed. To get an independent view on the company and their social and environmental activities, information from non-governmental organizations, independent research institutes and sometimes governmental agencies was also used. Not only the present situation but also the historical development of the sustainability strategies were reconstructed using this information. In addition to publicly available data, semi structured interviews were conducted with employees representing the following functions within in the company: CEO or Management; Sales and Marketing; Production; Procurement; Sustainability and CSR. During the interviews the respondents were also asked to give scores to the same thirty statements representing the innovation characteristics that were used in the quantitative survey. The results of these scores were used to analyse the relation with the actors and factors influencing the decision making process based on the contextual interaction theory. The statements can be found in appendix I.

A semi structured case study protocol containing the elements for describing and analysing the four cases can be found in appendix V. More details about the strategy selected for conducting the case-study research can be found in section 3.4.

The results of the analysis of the decision making process concerning the sustainability strategy of the cases, based on the structure in the case study protocol, are presented in the sections 6.3 till 6.6. The description and the analysis were made anonymously on request of the companies. The draft version of the description was send to the contact person in the company to check the information presented.

Cross-case analysis were conducted to identify common themes. The results of these analysis and general conclusions are presented in section 6.7 (Yin, 2013; Dul and Hak, 2008).

In the description of the cases many social and environmental activities, programs, guidelines and standards are discussed. Details and backgrounds concerning these activities were explained in chapter 4 of the dissertation.

6.2. GENERAL CHARACTERISTICS OF THE CASES

As explained in 6.1, the four selected cases are medium sized or large clothing “focal” companies. They have a strategic position in the supply network enabling them to influence decisions concerning the sustainability strategy. They are also front-runners which means they are participating in several sustainability activities. They do differ in type of clothes, target group and organization structure. Below, some general characteristics of the four cases, A, B, C and D are presented.
Case A is an international clothing company with hundreds of shops and three thousand employees in several European countries. The turnover in 2011/2012 was 460 million euro’s. Their products are only sold in their own shops. In 2009 they opened a web shop. The company designs the clothes and outsources the production. Therefore it can be characterized as a “head-tail” company. The production is located in twenty one countries. Approximately 90% of the production takes place in five of these twenty one countries: Turkey (30.9), China (30.6), Bangladesh (11.8), India (6.8) and Thailand (5.1). In 2010 they entered a partnership with a Chinese company and opened some shops in China.

Case B is a European clothing company. Their own stores are located in many big cities all over the world but their products are also sold in other shops. The company has therefore more than 6500 selling points, more than 800 employees worldwide and a turnover of more than 1 billion euro’s. Production is mainly outsourced to Bangladesh, China and India.

Case C designs, produces and sells professional working- and safety clothes under well-known brand names. The company has four hundred employees. The turnover in 2012 was 34 million euro’s. The head office is in Europe and the production takes place in Tunisia, Macedonia and also some in Western Europe. It is a traditional family-owned business but at this moment no member of the family takes part in the daily management. The company can be classified as a “column”-company because they own (or are a very big shareholder of) the production factories. These production factories in Northern Africa and Eastern Europe produce largely (80%) for them. In 2013 they opened their own new production site in Macedonia.

Case D is a provider of clothing and home-textiles based on strictly natural fibres. The company is a member of the International Association of Natural Textiles (IVN). Their core markets are Switzerland, Germany and Austria. The company employs a staff of approximately 350 employees and generated revenues of 70 million Euros in 2011. The products range from outer clothing for men, women and children, to nightwear and underwear, home textiles, baby clothing and accessories. The company can be classified as a “head-tail” company. Approximately 50% of the production factories are situated within the EU. Outside the EU, Turkey and China are the most important production countries, however, production also takes place in Bangladesh, Peru and Macedonia.

---

1 CSR report Case A, 2011/2012
2 CSR report Case A, 2010
3 CSR policy Case B, 2011
4 Social and Environmental report Case C, 2013
5 CSR report Case D, 2012/2013
In table 38, the general characteristics of the four selected cases are summarized.

<table>
<thead>
<tr>
<th>Case</th>
<th>Number of employees</th>
<th>Turnover in euro’s</th>
<th>Products</th>
<th>Production countries</th>
<th>Business Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3000 in the EU (incl. the shops)</td>
<td>460 million in 2011/2012</td>
<td>Fashion, diverse collection</td>
<td>Turkey, China, Bangladesh, India, Thailand and others</td>
<td>Head-tail</td>
</tr>
<tr>
<td>B</td>
<td>800 worldwide</td>
<td>more than 1 billion in 2012</td>
<td>Fashion, diverse collection</td>
<td>Bangladesh, China, India</td>
<td>Head-tail</td>
</tr>
<tr>
<td>C</td>
<td>400</td>
<td>34 million in 2012</td>
<td>Working and safety clothes</td>
<td>Tunisia, Macedonia, the Netherlands</td>
<td>Column/Head-tail</td>
</tr>
<tr>
<td>D</td>
<td>343 in the EU</td>
<td>70 million in 2011</td>
<td>Natural clothing and home-textiles</td>
<td>EU/Germany, Turkey, China, Bangladesh, Peru, Macedonia</td>
<td>Head-tail</td>
</tr>
</tbody>
</table>

Table 38: General characteristics of the four selected cases
6.3. THE DECISION MAKING PROCESS FOR DEVELOPING SUSTAINABILITY STRATEGIES IN CASE A

6.3.1. INTRODUCTION
As mentioned in 6.2, this company is an international clothing company with their headquarters in Western Europe. To understand the decision making process concerning their sustainability strategy the CSR reports of 2010 and 2011/2012 and the BSCI reports have been analyzed and the CSR manager of the company was interviewed.

In addition to paying attention to sustainability aspects in their own organization, the company also joined and initiated many different programs and activities concerning sustainability in their supply network. More detailed information about the programs, activities and standards mentioned can be found in chapter 4.

The CSR reports included activities in their own organization as well as strategies and activities in their supply network.

6.3.2. CSR ORGANIZATION AND STRATEGY
The CSR strategy was developed and implemented by the CSR-team. The team consists of the CEO, the CSR manager, the managers of the relevant departments like marketing, sales, human resource management, supply chain, logistics, procurement and the production. The CSR manager is the coordinator and has operational CSR related tasks. The team develops policies and strategies and meets every six weeks. The decision making process is based on consensus but the CEO final word on important issues. Operational aspects brought in from the different departments play an important role in the decision making process. The team has no specific CSR budget till 2012 and up till then the internal costs for CSR related activities were not transparent. The CSR manager is responsible for the funds given to charity organizations raised by selling the secondhand clothes that are collected in the shops (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

The company in the Netherlands has been certified for SA (social accountability) 8000 since 2001. A special team was formed in 2007 to improve the implementation of sustainability (social and environmental aspects) in their business operations. In 2011 they decided to use their own system for controlling these sustainability aspects and stopped with SA8000. These internal activities focus on safety, health and general labor conditions for the employees in the distribution center, the shops and the office, as well as the environmental aspects of the operations in these buildings and transport. Employees are stimulated to join sport events. Through these events money has been raised to finance projects in developing countries.

6.3.3. ENVIRONMENTAL STRATEGIES AND ACTIVITIES IN THE SUPPLY NETWORK
Concerning the environmental and ecological aspects the company is putting an effort in the following items: use of chemicals, the environmental impacts of the materials used for the garments, animal welfare, environmental management, cleaner production, the reuse of clothes and recycling of materials. The company wants to increase the use of more sustainable materials in all their products, causing less environmental impact. For the procurement of organic cotton the company uses GOTS (international certification of organic

---

6 CSR report Case A, 2011/2012
cotton). Following several years under this initiative, the decision was made to participate in the Better Cotton Initiative (BCI). In the beginning it was not possible for smaller brands to join. In the first years big brands set up the system. Since 2013 smaller brands could become a member too and that is when was decided to join. They now have a very positive experience where no certification is demanded and the projects greatly improve conditions at farmer level. In these projects quality improvement is related to sustainability and empowerment of the farmers (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

They are also increasing the use of natural fibers like organic hennep, linnen and tencel. Materials used in fashion from animals such as angora wool and down have gotten much public attention because of animal welfare. Company A has decided not to buy products with angora until they can guarantee that the supplying angora farms are meeting the requirements of an international recognized NGO for animal welfare. This company has also been exclusively using down produced as a by-product of the duck meat industry rather than down picked from living animals. Suppliers are asked to guarantee the origin of the down and the duck farms are annually checked by audits.

Company A does not demand the implementation of an environmental management system (ISO14001) from suppliers. However, in 2011, two suppliers of the company in Bangladesh joined a Cleaner Production Project run by an NGO. The aim of the project was to help suppliers in developing countries to reduce their environmental impact. The company and the supplier shared the costs for participation. Together the two suppliers reduced their emissions of CO2 by more than 5000 ton in one year and the project proved to be a real business-case. Because of the great success, the company decided to ask two other suppliers, also in Bangladesh, to join the Cleaner Production Project in 2013. The company also signed a declaration for the Partnerships for Cleaner Textiles (PaCT) in Bangladesh. This declaration aims to support suppliers with investments to reduce their environmental impact, especially focusing on “water” (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

To help ensure no clothing would become waste for many years, old left-overs from collections and stocks in the shops were sold to employees and their families, or given to philanthropic organizations. In 2011, the company started to stimulate consumers to bring back used clothes to their shops by giving a 5% reduction on new clothes being bought. The revenues are donated to charity. Up till recently, the company rarely made use of recycled textile materials for the production of new clothes. The hesitation to use recycled materials stemmed from the risk that these materials cannot always meet the quality criteria of the product. Only once recycled materials proved to meet the high design and quality criteria were they accepted for use (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

More recently, Company A were involved in a national textile recycling program and introduced two new products in their male collection knitted with partly post-consumer recycled material (denim/cotton) in the autumn of 2013. The products were produced in Italy and sold in stores in the Netherlands, Belgium, France, Germany, Austria and Switzerland.

---

7 CSR report Case A, 2011/2012
8 CSR report Case A, 2011/2012
This project is seen by the company as the first step towards really closing the loop by recycling the material of products that have been brought back to their own shops and making new quality fashion products out of it (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

6.3.4. SOCIAL STRATEGIES AND ACTIVITIES IN THE SUPPLY NETWORK

To address the social aspects in their supply network, the company decided to join the Business Social Compliance Initiative (BSCI) in 2004. Participating in this initiative means that the company, in cooperation with suppliers, is working on improvements concerning the social (working) conditions in the whole supply network. Nowadays a number of suppliers have a certificate based on the standard SA8000 (SAI, 2008) but the company did not demand that from their suppliers. Within the BSCI program the long term goal is to work towards the level of what the standard SA8000 requires9.

In 2012, 55% of the supplying factories met the BSCI standard and another 32% were involved in the auditing process and/or worked on improvements. To make control easier the number of suppliers was reduced by 30% and in 2013 all (98%) factories were part of the BSCI audit process. To facilitate training, capacity building and self-control beyond the BSCI-auditing they are considering joining the Made-By program in the near future. Some social aspects require further attention then is now offered and supported by in the Business Social Compliance Initiative. Four of these special social aspects are the safety and health risks of sandblasting, child labor in the cotton farms, the rights of young women in the Indian Sumangali system, and the fire and building safety accord in the garment industry developed after the accident in Bangladesh in the spring of 2013 (Union. et. al., 2013).

Creating a pair of jeans that already appears worn when you buy it is often done by sandblasting (see also chapter 4). When sandblasting is used, rigorous work practices must be in place to protect factory workers from potentially serious harm resulting from exposure to silica, a compound found in sand (Cimrin et. al., 2006). In June 2011, the company decided to stop selling jeans that were treated by sandblasting because of the health risks to the workers. Procurement officers request suppliers for alternatives to make the jeans look “worn” 10.

In 2010, the company became involved in an investigation, by Anti-Slavery International, concerning the rights of young women in garment factories in the south of India. They were living on the factories sites and part of their salary was set apart for their wedding as per local cultural custom of the Sumangali system (South and FLA, 2012). However, some owners of the factories appeared to misuse this system. For this reason, the company decided to join an initiative, together with other brands, retailers, NGO’s, suppliers and local governments to improve the rights of these young woman11.

Clothing companies do not often have a direct relation with cotton suppliers. However, they are held responsible for the labor conditions of the cotton farms. In Uzbekistan forced child labor was proven to be used for harvesting the cotton. Because of this, this company signed the Cotton Pledge in 2012 and in 2013 the company asked a guarantee in their contracts

---

9 BSCI report Case A, 2010
10 CSR report Case A, 2011/2012
11 CSR report Case A, 2011/2012
that the cotton delivered was not produced in Uzbekistan from all their suppliers. This policy will be used until improvements are reported by independent organizations (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

After the catastrophic accident in Bangladesh in the spring of 2013 Company A, like many others, signed the Accord on Fire & Building Safety in Bangladesh. Under this initiative, all the supplying factories from the participating companies will be audited on the fire and building safety regulations and that in the following years improvements will be implemented (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

6.3.5. The decision making process concerning social and environmental activities

As described, during the years 2009-2013, several decisions were made concerning the company's participation in environmental activities. Since 2012 they take back old clothes in their shops. Only since 2013, some (limited) new clothing made from recycled materials has been sold in their shops. The first decision concerning the social aspects (joining BSCI) had already been taken in 2004. The decisions made for joining the initiative for improving the Sumangali system in India in 2010 and signing the Cotton Pledge against child labor in Uzbekistan in 2012 were both very much in line with the BSCI program. The decision to sign the Accord after the Bangladesh accident in 2013 was within the company in line with the activities prepared (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

The decisions to join environmental activities appear to be influenced by opportunity based arguments. The guidelines for the use of chemicals (Restricted Substances List) were based on the guidelines of the Oekotex 100 standard and so the suppliers could easily meet the requirements. Also, the decisions to use more natural fibers like organic cotton (using GOTS), organic hennep, linnen and tencel, be it on a small scale, appear to be directly related to the availability of these materials from suppliers. The animal welfare related activities concerning the use of down and angora were easily made because the amount of these materials used in their products are limited and suppliers were able to guarantee certain standards without problems. Also, the decision made to ask suppliers to join the Cleaner Production Project appears to be largely influenced by opportunity. An NGO developed and offered a program and they were asked to join. The company decided to participate. Because of its success, the project has been expanded to two other companies in Bangladesh. Because no other companies in Bangladesh have wet processing units and the project is limited to Bangladesh they cannot expand further (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

The most recent activities are concerning taking back used clothes and the use of recycled garments for new clothes. Because the return is done in the shops and the customer receives a reduced fee for a new product, the relation with the marketing policy has proven to be very important. Also, the fact that competitors were already introducing return systems for their customers influenced this decision. Arguments to not accept a proposal in 2008 were related to marketing, logistic and financial aspects related to transport. In 2010/2011 in a project with the national government the agreement was made to start collecting used clothes in the shops. A new proposal was discussed in the team and the logistic and financial arguments used against it proved to be unrealistic. The transport trucks did not have to drive more because, they in fact drove empty back to the warehouses. Now they drove back with the used clothing. From a marketing perspective, arguments against the decision were still heard. An important factor was that from a marketing perspective they did
not want second hand (old) clothes in their shops. But the company as a whole now sees the return policy as a good example for participation of the consumers in environmental programs. The amounts they get back are not considerable but they decided to continue with the practice. Company A was aware during the decision making process that by collecting the clothes they would compete with charitable organizations. Because of the request of the national project, including the ministry, they decided to start regardless to compensate for potential economic loss, the money earned by selling the second hand clothes is given to charitable organizations (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

It was once again the opportunity that played an important role in the decision to make new clothes with garments from recycled materials. A national project needed experiments to show the operational possibilities for using recycled materials in new products. Company A was asked to join in the experiment. The products were not very successful in their shops but the sales were acceptable. A complex element in this project was the changing role of the company with their suppliers. Standard procedure is products are ordered and the suppliers take care of the procurement of the needed materials. Now however, because of special conditions for the recycled materials, the company bought the materials themselves and delivered it to the factories for making the products. They are now evaluating this new role. It could lead to a new business model in the future. However, at this moment it is not a priority (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

With respect to social aspects, the company responded to a request made by the Dutch Council for Retail Trade as early as 2004 and they decided to join the program Business Social Compliance Initiative (BSCI)\(^\text{12}\). Because the motivation concerning the social aspects was high the question was not if but which activity would fit best. The decision making process concerning the selection of an initiative for improving the social aspects was not easy for the company. Additional initiatives to the ones mentioned in chapter 4 were considered. The Fair Labor Association (FLA) is an American initiative and was therefore found not be a good choice for the European context. The demands of the Fair Wear Foundation (FWF) and the British Ethical Trading Initiative (ETI) were found to be too high and not fitting as additional system to the BSCI.

As previously mentioned, nearly 100 % of the suppliers were audited by BSCI in 2013. The company also recently looked into the possibilities for expansion for training, capacity building and self-control and may join Made By in order to accomplish this. This Company sees competition between all the initiatives and because of the overlap the initiatives have, Company A will have to choose which initiative must suits their organization. The conditions of the FWF does not appear to play a role anymore. However, after so many years of cooperative working with BSCI they do not want to begin this process again with another program (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

Signing the Accord for Fire and Building Safety in Bangladesh in 2013 was different from this other initiatives Company A has partnered with. The public pressure following the accident in Bangladesh did not so much change the policy as speed up the process for several existing projects and initiatives concerning working conditions. The accident did increase the sense

\(^{12}\) BSCI report Case A, 2010
of urgency. This company was in the first group of 40 companies that signed the Accord for Fire and Building Safety. The accord is seen as a separate issue in addition to BSCI. The audits conducted by BSCI cannot control the fire and building safety as stipulated in the accord because specific expertise is required. Also, in the future, no integration of the Accord for Fire and Building Safety is foreseen in the BSCI. The long term target is that the national government will improve its enforcement of fire and building safety (Union. et. al.,2013)!

The actors in the decision making process show to differ according to the type of aspect, activity and the related influence on a specific actor or department of the company. The decisions for using the Restricted Substances List and joining GOTs were made by the procurement manager in cooperation with the CSR manager. The decision to join the Cleaner production program was made by the Production Manager together with the CSR manager and the CSR team agreed. The decision to begin the return program for clothes was prepared by the marketing manager and the CSR manager. The decision to produce some products based on recycled material was very much influenced by research institutes, suppliers and the national government. They were in national projects experimenting with recycling and were looking for companies developing pilots. Within the company, the decision was made by the procurement and production manager together with the CSR manager. During the project, this company was faced with a dilemma. A few months prior to the launching of products made from recycled materials, the design team decided that the project should be stopped because the products did not conform into the collection. Higher power had to be used to demand the continuation of the project as agreed upon in the national project. Decisions concerning the social aspects and activities were made by the procurement manager and the CSR manager (CSR manager Case A, 2013, pers. comm., 13th of September 2013).

6.3.6. THE CONTEXTUAL INTERACTION THEORY AND THE DECISION MAKING PROCESS

The following conclusions concerning the decision making process with regards to the sustainability strategy of Case A were drawn using the structure of the contextual interaction theory for decision making processes (Bressers, 2009).

The first factor in the theory for decision making processes is “Motivation”. The company shows an awareness for the societal debates about sustainability aspects in their supply network. This corresponds to the high score of external orientation as one of the innovation characteristics (see figure 7 in section 6.3.7.) . The external pressure to act is felt but appears to differ for the social versus the environmental aspects. The intensity and the importance for the social aspects appear to be higher than the environmental aspects as stakeholders put more pressure on companies with respect to social aspects. The accident in the textile factory in Bangladesh in 2013 made them and many others to act and sign the accord (Union, 2013). This was in line with the existing policy but the accident speeded up the process. This company appears to be very aware of the opportunities to improve and join activities. Because many activities are offered to improve the environmental aspects of the company, they react to these opportunities and join a number of them. The cleaner production and recycling projects are examples of this. For the social aspects, a more active approach appears to have been needed to find and select activities that fulfilled their needs. The actors involved in the decision making process differ from those involved in the social activities versus the environmental activities. The decisions concerning social activities seem
to have a higher strategic relevance and are much more influenced by strategic stakeholders. In contrast, the decisions concerning the environmental activities seem to be much more influenced by operational processes and pragmatic opportunities offered by actors like suppliers, researchers and producers.

The second factor of this theory is “Cognition”. The company shows to possess much detailed information about all the different sustainability aspects and the activities they can join. The company participates in sector meetings and several projects with national governments. Information to judge the feasibility of joining the social activities is often difficult to get. The required investment in time, money and possible revenues for participating in these endeavors is often unclear forcing the company to take a risk.

For example, the consequences of signing the Accord for Fire and Building Safety are not clear at all. Also, this case showed that the company had doubts about joining a multi stakeholder initiative because of the involvement of the NGO’s. The feasibility of the environmental activities is much more transparent in terms of time, money, technological challenges and revenues required for success.

The third factor, “Resources”, or capacity-power, from the contextual interaction theory appears to be very important for this company. This is because the company has a high traditional power looking at the turnover and the number of employees. It is a big, powerful company that can use their position to force others to meet certain standards. One aspect of this power factor makes using the power for improvements difficult. This aspect is the amount of suppliers and the control they have over them. Many different factories produce for this company and the percentage they produce specifically for them is rather low. For this reason it is sometimes difficult to use the potential power they have. As explained in the case, the number of suppliers was reduced with 30% in 2013 and therefore the level of production for the company per supplier has increased. This makes control easier because the factories are more dependent on the company.
Table 39 summarizes the factors and the influence found on the decision making process concerning participation in social and environmental activities in the supply network of case A.

<table>
<thead>
<tr>
<th>Social Activities</th>
<th>Motivation</th>
<th>Cognition</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>(actors: CEO, CSR manager, procurement manager)</td>
<td>High importance</td>
<td>High level of access to information</td>
<td>Big turnover</td>
</tr>
<tr>
<td></td>
<td>No easy opportunity’s</td>
<td>Very familiar with aspects and activities</td>
<td>Many employees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feasibility less transparent</td>
<td>Many different suppliers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Low% share</td>
</tr>
<tr>
<td>Environmental Activities</td>
<td>Medium importance</td>
<td>High level of access to information</td>
<td>Big turnover</td>
</tr>
<tr>
<td>(actors: CEO, CSR manager, production manager, procurement, marketing)</td>
<td>Opportunities are in the market</td>
<td>Aspects and activities</td>
<td>Many employees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feasibility often clear</td>
<td>Many different suppliers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Low % share</td>
</tr>
</tbody>
</table>

Table 39: factors influencing the decision making process concerning participation in social and environmental activities in the supply network of case A.

6.3.7. INNOVATION CHARACTERISTICS OF THE COMPANY AND ITS RELATION TO THE DECISION MAKING PROCESS

During the interview, the CSR manager of the company was asked to give a score to thirty statements concerning six categories (5 statements each) of innovation characteristics of the company and its supply network. The scores were between 1 (fully not agree) and 5 (fully agree). The results of the scores of the six categories are shown in the figure 7.
The total score was 102, out of max. 150, which shows that the company has a medium innovation capacity level.

The relation between the decision making process concerning sustainability as described in the sections 6.3.2, 6.3.3. and 6.3.4. and the scores of these characteristics is discussed below.

The external orientation resulted in a high score which shows that the company is very aware of what is happening in society and their market concerning sustainability. The information from public sources and the results of the interview also show a very high level of available information on the sustainability aspects and activities that can be joined. During the interview, the sustainability manager was acquainted with all the eleven activities selected. The company is also active in sector initiatives and projects together with the government. Therefore they are familiar with the opportunities to act. Joining the Cleaner Production program, the take back system, the recycling project, BSCI etc. are all examples of opportunities to act.

As can be seen in table 38, the company has a lot of traditional power resulting from their large size with more than 3000 employees in the EU and a turnover of 460 million euros in 2011-2012. Consequently, they have the capability in terms of resources. But, do they also have the capability in terms of competences to react?

The category “learning” also scored highly. This shows that the company has capability and experience for learning by experiments in their supply network. This can explain why they participated in opportunities that were offered even though this company scored lowly in the category “cooperation”. This may suggest that they do not yet have much experience in cooperation but they do have the capability to learn.

The category “leadership” scores are rather low. As can be seen in the description of the case, most initiatives were opportunities that came along. The company did not develop a strong CSR policy for starting innovative sustainability projects on their own as strong
leaders might have. The decision making processes as described in the case do show the dilemmas between the pragmatic business driven marketing departments against the demand to act and be taken serious on the issue of sustainability by stakeholders representing society, NGO’s and governments.

6.3.8. CONCLUSIONS
Analysis of the decision making processes shows that depending on the type of aspect and activity being pursued, other actors and departments within the company were involved. The CSR department is always involved but can never make a decision by itself. For the decisions related to the use of other, more sustainable fibres, the procurement department took leadership. For decisions concerning social and environmental improvements during the production phase the production manager lead and for decisions related to selling products of recycled material and collecting old clothes in the stores, the marketing department played an important role.

The analysis of the decision making processes based on the contextual interaction theory shows that with regards to the motivation factor the importance of the social activities is high and for the environmental activities medium. This corresponds with the finding that the decisions concerning the social activities were made five years prior to those of the environmental activities. Despite the fact that opportunities for joining these social activities was difficult at that time.

The feasibility, being part of the cognition factor, of social and environmental activities showed to be different while the other elements of this factor hardly differ. Despite the fact that the feasibility for the social activities was less transparent they did decide to take the risk and join them (see motivation).

With regards to the capacity-power factor the number of suppliers is a very relevant element in the decision making process and the factor shows to be less based on the turnover and the number of employees.

The innovation characteristics show a strong external orientation, a result driven organization, a capability to learn but weak leadership. These results correspond with the pragmatic decision making process that was found. Decisions concerning the environmental aspects were made five years later then the decisions made concerning the social aspects. This difference can be explained by the weak leadership that makes the company opportunistic following the societal debate. The arguments during the decision making process are often pragmatic and experiments/projects/initiatives often invited them to join. The decision making process sometimes illustrate clearly the dilemma’s the company has faced and in one example higher power to force a decision was used.
6.4. THE DECISION MAKING PROCESS FOR DEVELOPING SUSTAINABILITY STRATEGIES IN CASE B

6.4.1. INTRODUCTION
As mentioned in 6.2, this company is a European clothing company that has produced clothing over 25 years. To understand the decision making process concerning their sustainability strategy, the information of the MADE-BY benchmark, and their CSR policy titled “responsibility” at their website, were analyzed. Based on this information the CSR manager and one of the employees of the CSR department were interviewed.

This company joined and uses different programs and activities concerning sustainability in their supply network. They became a member of MADE-BY in 2011, four and half year after they had published their first CSR policy\(^\text{14}\). More detailed information about MADE-BY and other programs, activities and standards mentioned can be found in chapter 4.

6.4.2. CSR ORGANIZATION AND STRATEGY
The materials of the products and other environmental related issues became part of the CSR policy and a task for the CSR department as of 2006/2007. From the start, CSR was in the center of the company’s strategy and vision. The company had to set new priorities but was not communicated or captured in a formal policy. This was an important shift in the strategy and culture of the company\(^\text{15}\).

The position of the CSR department has now become much stronger and important processes have become much more transparent. This transparency is still increasing. The CSR department addresses the issues and is coordinating the projects and activities. But the decisions are made in the regular management meetings with the CEO. The management of the sourcing and production processes is very important for the CSR policy and activities. The CR policy focuses on the supply chain, the products and the operations of the company and also includes community support. The company is represented in several sector working groups and projects concerning CSR related topics often together with competitors. The company does not publish an official CSR report but does give a lot of information on their website and via a third party report based on monitoring and verification.

6.4.3. ENVIRONMENTAL STRATEGIES AND ACTIVITIES IN THE SUPPLY NETWORK
Beginning in 2008, the strategy concerning sustainable (causing less environmental impact) products began very ambitiously. They developed special sustainable products and introduced them in the consumer market. They started with separate sustainable capsule collections to introduce working with sustainable materials to the designers and suppliers. After some seasons they decided to change their approach and integrated sustainable materials into the entire collection with a focus on bestselling styles. This way, they were able to increase the percentage of sustainable materials in our collection (CSR manager/employee Case B, 2013. pers. comm., 24\(^\text{th}\) of December 2013).

The company now wants to gradually increase the use of sustainable materials in their products gradually with a focus on bestselling styles. Consumers that buy their products

\(^{14}\) CSR policy Case B, 2011
\(^{15}\) CSR policy Case B, 2011
because they like it contribute at the same time to increasing the share of sustainable materials in the collection.

In 2012, 10% of the collection was made of sustainable materials as classified by MADE-BY (Made-By, 2009). These materials are organic cotton, recycled cotton, tencel, recycled polyester, linen, hemp and ramie. From the total cotton used, 10% was organic cotton (certified by GOTS or Organic Exchange). Access to organic cotton, recycled cotton and other sustainable materials is a great barrier for increasing the use of these materials in the clothing industry. Therefore the company decided to become a member of the non-profit organization Textile Exchange. The goal of this organization is to increase the global market for sustainable fibers, with a special focus on stimulating farming and trading of organically grown cotton. Their materials policy contains requirements for the suppliers concerning the use of raw materials such as no fur, no angora and no down from live-plucked birds16.

In 2010, the company started a recycling program by blending post-consumer denim with organic cotton. The post-consumer denim was collected from their own warehouses, sorted and selected. After unraveling, the denim was mixed with organic cotton, spun into yarn and woven into new fabrics. These fabrics were used to produce new products. They started with 10% recycled cotton and overtime they were able to increase the percentage up to 20%. Their policy is to increase the percentage of recycled cotton in new garments slowly and in cooperation with the fabric suppliers for all sustainable materials (CSR manager/employee Case B, 2013. pers. comm., 24th of December 2013).

The recycling policy does not only focus on cotton but cotton is the largest quantity of textile materials being used and thus gets so much attention. Company B has also joined projects for recycling plastics, like Poly Ethylene, PET, from soft drink bottles. In the autumn of 2014, a new collection was launched, made from yarn created from recycled plastic harvested from the ocean. They do not use a take back system for used clothes in their shops but they do consider to start some kind of take back program in the near future (CSR manager/employee Case B, 2013. pers. comm., 24th of December 2013).

The CSR department is discussing the possibilities for a "closing the loop" strategy for textile materials. Over the last six years they have been working on understanding the supply chain and reducing impacts where possible. Now a new strategy for the future is needed and the recycling of the materials will be a very important element of this new strategy. Joined take back programs in the sector make the quality control of the materials complicated. Because it is hard to know which chemicals your competitor used in the product you could end up contaminating your product with recycled material that is made out of their product (CSR manager/employee Case B, 2013. pers. comm., 24th of December 2013).

In addition to focusing on the textile materials, the company also actively prevents the use of textile-chemicals that can have a harmful impact on health and environment in their products and production processes. They use their own Restricted Substances List (RSL) and monitor the compliance. The list follows international laws and regulations and is updated frequently. They joined the Joint Roadmap towards Zero Discharge of Hazardous Chemicals (by 2020) together with many other well-known fashion brands. The Joint Roadmap was a reaction to the public pressure caused by NGO Greenpeace’s 2013/2014 “Detox Campaign” on the use

---

16 CSR policy Case B, 2011
of chemicals in the clothing industry. Because this approach is stricter and tailor made for their own policy they do not use Oekotex or EU-Ecolabel certification concerning the use of chemicals. In 2013 they became a system partner of “blue sign technologies”. This is an independent standard that guarantees that products are free of hazardous chemicals. More information on these projects and the standard can be found in chapter 4.\(^{17}\)

The company is also cooperating with suppliers on various innovative dyeing and finishing processes, including ozone bleaching, laser treatments and natural tanning of leather to reduce the environmental impacts during production. Large amounts of water, energy and chemicals are being reduced by these projects. Producing factories for this company in Bangladesh joined the Cleaner Production program of a Dutch NGO. They signed the four year extension program, WaterPaCT, in 2013 (CSR manager/employee Case B, 2013. pers. comm., 24\(^{th}\) of December 2013).

In November 2010 this company, banned the use of sandblasting because of the negative impacts on the health (lungs) of the workers. They stopped the sale of sandblasted products at the end of 2011.\(^{18}\)

The company developed their own code of conduct for all suppliers including the social and the environmental aspects in the supply chain. In addition to the criteria for working conditions, the code also contains the restricted list of substances, the materials policy and other environmental aspects based on the ISO14001 standard. Because it is an integrated approach the code will be explained in 6.4.4. together with strategies and activities in the supply network for the social aspects (CSR manager/employee Case B, 2013. pers. comm., 24\(^{th}\) of December 2013).

6.4.4. SOCIAL STRATEGIES AND ACTIVITIES IN THE SUPPLY NETWORK

The attention paid towards working conditions in their supply network increased in 2007 after a public campaign against the situation in one of this company’s production factories in India. It was also the start of a formal CSR department within the company (CSR manager/employee Case B, 2013. pers. comm., 24\(^{th}\) of December 2013).

As mentioned in section 6.4.3. the company developed their own supplier code of conduct. Standards and certifications like BSCI, FWF and SA8000 were not flexible enough. The company has the culture to conduct activities themselves as also was illustrated with the restricted list of substances under the environmental activities.

The code of conduct is based on the UN Universal Declaration of Human Rights, the ILO Core conventions, the Ethical Trading Initiative (ETI) base code, the SMETA environmental criteria and ISO14000. To audit suppliers this company uses a public methodology called Sedex Members Ethical Trade Audit (SMETA). The methodology is designed by a multi stakeholder panel composed of brands, NGO’s, suppliers and auditing companies and enables sharing of information between brands and suppliers. When factories are certified by programs like SA8000, BSCI or others, these results are used to prevent extra workload. To make the use of different systems, including their own, possible and at the same time being transparent, they decided to join the MADE-BY program in 2011 (Made-By, 2011).

\(^{17}\) CSR policy Case B, 2011

\(^{18}\) CSR policy Case B, 2011
The company does not own or operate any factories themselves. Their aim is to build a trustworthy and long-term relationship with a small group of skilled suppliers. In 2013, half of the production volume was produced by factories that had been working for them for more than 10 years. Through their sourcing and production activities the company is connected to farmers and factory workers in many different countries predominately in Asia. The company is cooperating with seven garment factories in Bangladesh. Long before the colossal accident in the spring of 2013 these factories were inspected using their own code of conduct. The accident did not change their policies or the code of conduct towards these factories. They did sign the Accord for Fire and Building Safety in Bangladesh and extra trainings and inspections concerning fire and building safety were planned in 2014. The accident did however, speed up some of the processes for improvements that otherwise might have taken longer. The company established a foundation in 2007 that supports projects in their production countries. They focus on education and entrepreneurship. As a company being founded on entrepreneurial spirit they believe that knowledge and business opportunities are the best way to economic independence and therefore key for development. That is why they offer trainings and also grants and loans in cooperation with development organizations. They now support projects in India, China, Bangladesh and Peru (CSR manager/employee Case B, 2013. pers. comm., 24th of December 2013).

6.4.5. THE DECISION MAKING PROCESS CONCERNING THE ENVIRONMENTAL AND SOCIAL ACTIVITIES

The decision to formalize a policy on compliance regarding working conditions in the supply network was influenced by pressure from NGO’s in 2007. It also was the start of a separate CSR staff-department within the organization. The policy concerning environmental aspects of the materials used also started in 2007/2008, first with separate capsule collections and after 1-2 years by integrating sustainable materials into the entire collection. Decisions on using plastic ocean waste for a new collection were made very recent in 2013/2014.

The general aim to increase the use of materials that cause less environmental impact did not change. However the goal was not focusing on single products anymore but the goal became that the percentage of materials causing less environmental impact should increase slowly in all products. Recognizing the barriers for increasing the percentages of materials with lower environmental impact Company B decided to become a member of the non-profit organization Textile Exchange since they first started using sustainable materials.

Recycled materials were included in the list of more sustainable materials in line with the MADE-BY benchmark for fibers (Made-By, 2009). The decision concerning a take back system for clothes is very much influenced by the image of the brand and they are looking for a system that fits them best. Collecting old clothes in their carefully designed shops does not fit in their marketing strategies and policies. They are now studying on different take back systems that fits the brand. But as mentioned the recycling of materials that were produced by competitors might cause contamination with unknown chemicals therefor the company only does recycling projects with material from their own products (CSR manager/employee Case B, 2013. pers. comm., 24th of December 2013).

With respect to the use of chemicals in the processes and the products, the company has their own list of restricted substances in place since many years and decided in 2012 to join the Zero Discharge Roadmap. As mentioned, this decision was very much influenced by the public pressure from the Greenpeace “detox” campaign. They explicitly do not use labels that focus on the chemicals being present in the final product but focus on the reduction of
hazardous chemicals in all phases of the supply chain. Company B became a partner of blue sign technologies to accomplish this. The CSR department has their own substance specialists. This may explain why they have decided to develop their own strategy rather than joining public available labels (CSR manager/employee Case B, 2013. pers. comm., 24th of December 2013).

The environmental, safety and health policies are strict during the production phase. As mentioned, the chemicals are not only banned because of risk to the consumer but also because of the environmental impacts during the production of the fibers (agriculture or chemical industry) and the disposal phase. Chemicals are also banned or replaced because of environmental, safety and health risks during the industrial production of the garments and the clothes themselves. Because of this the strict policy on chemicals is expanding to these phases as well. For example, sand blasting has been prohibited because of safety and health risks for the workers.

Some production factories of Company B have joined the Cleaner Production programs offered by a Dutch NGO. They have succeeded in reducing water, energy and chemicals. It is however unclear if the company would have supported this endeavor had the Dutch NGO not been the operator of this program. But if the company also would have been supporting these factories when the Dutch NGO would not have run this program is not clear. Another note of interest is that the program of the Dutch NGO only covers Bangladesh so production factories in other countries cannot join this program.

This company is not using or demanding certification based on ISO14001, OHSAS18001 and/or ISO9000 to control the level of environmental, health and safety management in the production factories. They have developed their own code of conduct and do the related audits themselves. This code is used for all suppliers and includes the environmental, safety and health aspects and the working conditions. This company, similarly to their control over chemicals use, has not joined a common public program but they follow their own strategy. Their own code of conduct is based on different accepted international standards.

As already indicated, the company is following its own route for the environmental strategies and activities. This is also the case for the social strategies and activities. Company B has not joined programs like the FWF, BSCI and do not demand SA 8000 certification from suppliers. They have developed their own code of conduct and integrate all information from other activities and initiatives into this strategy. To keep control and close contact with the suppliers the company explicitly selected a limited number of suppliers. These suppliers produce a large percentage of the total turnover for them (CSR manager/employee Case B, 2013. pers. comm., 24th of December 2013).

In 2006/2007 the CSR department was established in response to the strong public pressure concerning the working conditions in their supply network. The CSR department is a staff department that cannot make independent decisions on sustainability issues or projects. They can and will propose them but the actual decisions are made by the regular management team together with the CEO. The management of the sourcing, the production and the marketing departments are the most relevant actors for the decisions made concerning CSR policy and activities.
6.4.6. THE CONTEXTUAL INTERACTION THEORY AND THE DECISION MAKING PROCESS

In order to analyze the decision making process concerning the sustainability strategy of Case B, the structure of the contextual interaction theory was once again used. The results are presented below.

The “Motivation” of the company indicates an awareness of the societal debates around sustainability aspects in their supply network. They do feel the intensity and the importance to react on this societal debate. This differs for the social versus the environmental aspects. The intensity and the importance for the social aspects appear higher than for the environmental aspects. This is primarily caused by the activities of an NGO criticizing the working conditions in one of their production factories.

This company is very aware of the opportunities to join activities and improve conditions. Decisions to join environmental initiatives are sometimes made as reactions to what is offered to them. The Cleaner Production program in production factories in Bangladesh is an example of such an opportunity. But the production of fashion based on recycled plastic from the ocean shows that they also develop their own initiatives.

Many opportunities are also available for the social aspects. However, this company has chosen to develop their own code of conduct and implement it themselves. The decision not to introduce a take back system for used clothes and look for a system that fits the organization best shows that departments within the organization do not always have the same motivation.

Concerning “Cognition”, the company has detailed information about the various sustainability aspects and the activities which can be join. The company participates in sector meetings and several projects. Because they use their own code of conduct and have a limited number of suppliers (see under resources), the feasibility of these activities can be judged easily and the consequences are transparent. The time, money and technological consequences for participating in environmental programs like Textile Exchange and the Roadmap for Zero Discharge of Hazardous Chemicals are often unclear. In this case the company takes a risk by joining these programs. This does not apply to the Cleaner Production program in Bangladesh because this program is run by an NGO and financed with subsidies.

The third factor “Resources” (or capacity/power) from the contextual interaction theory is a strong factor for this company. They have a high traditional power based on turnover. They do not have a large number of employees because the majority of their products are sold in shops they do not own. Because they have explicitly chosen to have a limited number of suppliers they have a lot of power over these suppliers. These suppliers produce a high percentage or exclusively for them. Consequently the relationship is very close and they can influence the social and environmental aspects very effectively.
Table 40 summarizes the factors and the influences found on the decision making process concerning participation in social and environmental activities in the supply network of case B.

<table>
<thead>
<tr>
<th>Social Activities (actors: CEO, CSR manager, production manager)</th>
<th>Motivation</th>
<th>Cognition</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High importance</td>
<td>High level of access to information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Opportunity's and own Program</td>
<td>Very familiar with aspects and activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feasibility transparent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Big turnover</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average number of employees</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Few suppliers</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>High % share</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Activities (actors: CEO, CSR manager, production manager, procurement, marketing)</th>
<th>Motivation</th>
<th>Cognition</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medium importance</td>
<td>High level of access to information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Opportunity’s and Own program</td>
<td>Aspects and activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interpretation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feasibility often not clear</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Big turnover</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average number of employees</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Few suppliers</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>High % share</td>
<td></td>
</tr>
</tbody>
</table>

Table 40: factors influencing the decision making process concerning participation in social and environmental activities in the supply network of case B.

6.4.7. INNOVATION CHARACTERISTICS OF THE COMPANY AND ITS RELATION TO THE DECISION MAKING PROCESS

During the interview, the CSR manager and an employee of the CSR department were asked to give a score to thirty statements concerning six categories (5 statements each) of the innovation characteristics of the company and its supply network. The scores were between 1 (fully not agree) and 5 (fully agree). The results of the scores of the six categories are shown in the figures 8 and 9 below.
As can be seen in table 38 the company has a lot of traditional power because they are a big company with many employees and a large turnover. They clearly have the capability in terms of resources but do they also have the capability in terms of competences to react?

The relation between the decision making process concerning sustainability as described in the sections 6.4.2 - 6.4.4. and the scores given to the innovation characteristics is discussed below.

The scores given by the employee of the CSR department are lower or consistent in all categories with the scores given by the CSR manager. Despite both giving the lowest score, the biggest difference in scores can be seen in the category of leadership. They both describe the company as a “learning” organization and categories other than leadership are
on average at the same level. The score for learning may indicate that the company has the capability for learning by experiments in their supply network. This may explain why they acted on opportunities that where offered despite a slightly lower score in the category “cooperation”.

During the interview both the CSR manager and employee showed an acquaintance with all the eleven activities selected (external orientation). The company is also active in sector initiatives illustrating that they are very familiar with the opportunities available. Joining initiatives like the Cleaner Production program, Textile Exchange and the roadmap for zero discharge of hazardous chemicals exemplify this.

The category “leadership” scores at the lowest level. As can be seen in the description of the case, most initiatives were opportunities that came along and did not require leadership. The decision to become a member of Textile Exchange to try and increase the percentage of sustainable fibers in all their products does however, show leadership. Also, the decision to increase the percentage of sustainable fibers in their entire collection showed leadership. More recently, this company has developed a new fashion product based on recycled plastic from the oceans which requires both leadership and a strong marketing strategy.

All decision making processes as described in the case illustrate the dilemmas between the sustainability topics and pragmatic business driven marketing arguments. Consequently, the decision to not yet introduce a take back system for used clothes was made because a system that would fit into their marketing strategy best was not ready for implementation.

6.4.8. CONCLUSIONS

The case shows that the CSR department was established in 2007 as a reaction to intense public pressure concerning the working conditions in their supply network. Over the past 8 years this CSR department has slowly increased its influence on strategic management decisions not only for social but later also for environmental aspects. However, they do remain a staff department dependent on the sourcing, production and/or marketing departments. These departments have power over strategy development and thus the sustainability aspect that fall under this.

Looking at the factors of the contextual interaction theory the motivation for developing activities for social aspects started with public pressure. Over time it has developed into a pragmatic strategy that, when possible, was combined with an opportunistic marketing strategy. This can also be said for the environmental aspects. In the beginning, the environmental aspects were clearly lower in importance but they became more important over time. They made use of opportunities but also developed their own custom tailored programs.

After the establishment of a special CSR department the general cognition level in the organization increased greatly but the feasibility of programs they join is not always clear. When the program meshes their marketing strategy this lack of feasibility is accepted.

The company has a strong traditional power influenced greatly by its large turnover. Power is further influenced by its structure. This company has a limited number of suppliers that produce a high percentage of goods exclusively for them. This allows the company to exercise much influence (power) over these suppliers and they use their own code of conduct to improve social and environmental conditions.
The **innovation characteristics** show that the company has a strong external orientation and high competences for learning and cooperation to develop innovations and projects. They have a strong wish to develop their own programs and activities concerning sustainability aspects and join less external programs. Despite a lower (medium) leadership score some decisions made exemplify show leadership in the sector. The recently new collection produced from plastic out of the ocean is an example of this. This decision that did show leadership may be explained by the support of the project by the marketing department as well as the inclusion of a famous artists, producer and designer.

At the same time, the decision not yet to introduce a take back system for used clothes in their shops but wait for the development of an approach that fits the company best could be seen as an example of “weak” leadership. It illustrates that support of the marketing department for decisions is crucial. In this case the marketing argument not wanting to have “old” clothes in their shops influenced this decision strongly.

6.5. THE DECISION MAKING PROCESS FOR DEVELOPING SUSTAINABILITY STRATEGIES IN CASE C

6.5.1. INTRODUCTION
As mentioned in 6.2. this company designs, produces and sells professional working- and safety clothes under well-known brand names. It has been is 100% family owned business since 1865 however, there are no longer family members involved in the daily management at this point. Approximately 400 people work directly for the company. An estimated 1000 people are employed indirectly in production locations in Tunisia and Macedonia. One of the production factories in Macedonia has been owned by this company since 2013\(^\text{19}\).

To understand the decision making process concerning their sustainability strategy the social and environmental reports of 2012 and 2013, the yearly reports of the Fair Wear Foundation and information on their website have been analyzed. The general manager, also responsible for CSR, of the company was interviewed.

More detailed information about the programs, activities and standards mentioned can be found in chapter 4.

6.5.2. CSR ORGANIZATION AND STRATEGY
The sustainability strategy for Company C is developed by a team and implemented by the daily management of the company. The decisions are confirmed by the board of commissioners. The team consists of the general manager, the financial manager and the managers of the relevant departments like sales/marketing, human resource management, procurement and production. The general manager is responsible for the sustainability policy (General Manager Case C, 2013, pers. comm., 10\(^\text{th}\) of October 2013).

6.5.3. ENVIRONMENTAL STRATEGIES AND ACTIVITIES IN THE SUPPLY NETWORK
Case C’s involvement in environmental aspects is illustrated through their use of or participation in three activities/programs. In response to market requests to meet EU standards on chemicals in garments, this company uses the Oekotex 100. Consideration of

\(^{19}\) Social and Environmental report Case C, 2013
EU-Ecolabel use instead of or in combination with Oekotex 100 was made. However, Oekotex 100 is more renowned and demanded in the market and the EU-Ecolabel did not contribute extra value to it (General Manager Case C, 2013. pers. comm., 10th of October 2013).

Several suppliers of garments/materials use Environmental Management Systems according to ISO14001 for managing the environmental impacts of their processes. Being certified for ISO14001 is not demanded but is often seen as a positive criterion in the procurement procedure. This company has not introduced ISO14001 in their own factories yet but will in the coming years.

The third activity concerning the environmental impact of their products is the use of the Cradle to Cradle principle for the development of new products. In 2011, Company C began a project in cooperation with the suppliers of the garments, the textile service providers and a waste management company for developing workwear based on the Cradle to Cradle principle as explained in Chapter 4 (Braungart, 2007). The waste management company was the initiator of this endeavour. They were one of Company C’s clients. They requested Cradle to Cradle working clothes. The result of this project is that since December 2012, Company C offers cradle to cradle workwear, certified at silver level, as a full service concept. The workwear can be leased from a supplier so the suppliers hold ownership of all the materials, repair and wash the clothing using methods with a low environmental impact and ensure that the quality is retained. They also collect the clothing at the end of its lifespan for recycling. This new product was the first ever Cradle to Cradle workwear made from cotton. It won the Sustainability Award during the Dutch National Safety at Work Event in 2013.

No recycling or take back initiatives have been put in place for the products that have been sold and used in the past. The company is developing a program for a take back system that will be implemented in 2015 (General Manager Case C, 2013. pers. comm., 10th of October 2013).

6.5.4. SOCIAL STRATEGIES AND ACTIVITIES IN THE SUPPLY NETWORK

Because more than 80% of the products are produced in their own companies or in companies that produce primarily for them, the transparency and the control on the social working conditions is high.

In 2004 this company decided to become one of the first companies to join the Fair Wear Foundation. This was an initiative from the family that owns the company. A member of the family was also a member of the board of the sector organization that has supported the Fair Wear Foundation from the start.

The working conditions at suppliers that are part of the 20% that are not owned or directly controlled by the company itself are managed either by joining the BSCI or certification according to the SA8000 standard. The responsibility for the implementation of the activities as a result of the membership to the Fair Wear Foundation lies at the daily management of the company and every year a social report is published. All factories are visited by

---

20 Social and Environmental report Case C, 2013
21 Social and Environmental report Case C, 2012
22 Yearly report Fair Wear Foundation Case C, 2012
employees from the company 3-4 times a week and the management 3-4 time a year. The company has offices in both Macedonia and Tunisia.

Because this company does not produce in Asia, the public debates concerning the potentially horrific working conditions in the garment industry and the accident in Bangladesh in 2013 did not influence their strategy (General Manager Case C, 2013. pers. comm., 10th of October 2013).

6.5.5. THE DECISION MAKING PROCESS CONCERNING ENVIRONMENTAL AND SOCIAL ACTIVITIES

As earlier described, the first decision concerning the social aspects was made in 2004. This company became a member of the Fair Wear Foundation immediately after it was founded. The main strategic decision concerning the environmental aspects was the decision to start a Cradle to Cradle project in 2011. The company is also developing a program for a take back system to be implemented in 2015.

There was no hesitation in deciding to join the Fair Wear Foundation despite the involvement of the NGO Clean Clothes Campaign in this Multi Stakeholder Initiative (MSI). The company showed that they dared to be open and transparent towards society concerning the social aspects of their supply network. As said, this decision was influenced by a family member. This family member was also a member of the board of the sector-organization involved in setting up this initiative. This decision was further influenced by the governments sustainable procurement policies that rewards companies for joining the Fair Wear Foundation. In the market of working and safety clothes Governments are important clients (Preuss, 2009). The responsibility for the implementation of this initiative lies with the daily management of the company.

Decisions to use Oekotex 100 and ISO14001 were pragmatic and following in market demands. The main strategic decision concerning the environmental aspects was the decision to start a Cradle to Cradle project. The target was to become the first company supplying cotton work wear with a cradle to cradle certificate. This goal has been achieved (HAVEP-Rework, 2014). The decision to start a Cradle to Cradle work wear project was also stimulated by a request from one of their waste management company clients. The general manager (CEO), the manager sales/marketing and the manager production were all involved in this decision. It was also approved by the board of commissioners (General Manager Case C, 2013. pers. comm., 10th of October 2013).

6.5.6. THE CONTEXTUAL INTERACTION THEORY AND THE DECISION MAKING PROCESS

For the decision making process concerning the sustainability strategy in this Case C the following conclusions were drawn using the structure of the contextual interaction theory for decision making processes:

The “Motivation” behind the company’s decision making process is clearly influenced by an awareness of the societal debates about sustainability aspects in their supply network. They feel the social aspects are extremely important, more so than the environmental ones. They are also keenly aware of the opportunities to improve and join activities. The opportunities for such activities in their supply network appears more readily available for social aspects than the environmental aspects.

---

23 Social and Environmental report Case C, 2013
With regards to the “Cognition” component of this theory, the company is in a position of detailed information concerning all the various sustainability aspects and the activities that can be joined. Information to judge the feasibility of joining the social activities is generally easy to obtain because of the limited number of factories producing high percentages of product for them. However, information concerning the feasibility of the ambitious Cradle to Cradle (environmental) strategy was much more difficult to obtain. This made it a high risk initiative.

The third factor “Resources” (or capacity/power) is clearly a very relevant factor for the decision making process. As can be seen in the overview of the general characteristics in 6.3., because Company C has 400 employees (and indirect another 1000) and a turnover of 43 million euros in 2012, they are a company with traditional power. This traditional power is further illustrated by the factories that produce for them, rely heavily on them, or they even own them.

Table 41 summarizes the analysis of the factors and the influences found on the decision making process with regards to participation in social and environmental activities in the supply network of case C.

<table>
<thead>
<tr>
<th>Social Activities (actors: family member, general manager, production manager, manager sales/marketing, board of commissioners)</th>
<th>Motivation</th>
<th>Cognition</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>High importance Opportunities in the market</td>
<td>High level of access to information Very familiar with aspects and activities Interpretation Feasibility transparent</td>
<td>Big Turnover Average number Employees (indirect high) Very low number of suppliers High % share</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Activities (actors: family member, general manager, production manager, manager sales/marketing, board of commissioners)</th>
<th>Motivation</th>
<th>Cognition</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium importance Some opportunities in the market</td>
<td>Medium level of access to information Familiar with aspects and activities Interpretation Feasibility less clear</td>
<td>Big Turnover Average number Employees (indirect high) Very low number of suppliers High % share</td>
<td></td>
</tr>
</tbody>
</table>

Table 41: factors influencing the decision making process concerning participation in social and environmental activities in the supply network of case C.
6.5.7.  INNOVATION CHARACTERISTICS OF THE COMPANY AND THE RELATION WITH THE DECISION MAKING PROCESS

During the interview, the manager of the company was asked to give a score to thirty statements concerning six categories (5 statements each) of innovation characteristics of the company and its supply network. The scores were between 1 (fully not agree) and 5 (fully agree). The results of the scores of the six categories are shown in figure 10.

The total score was 116, out of max. 150, and illustrates that the company has a medium to high innovation capacity level.

All categories score approximately the same score with the exception of ‘leadership’. The average score of the five innovation capacity categories is medium to high. The category leadership has a medium score. As a family-owned company, it is unusual that the score for the category leadership is so low. This low score is even more surprising because this company was one of the first companies to join the Fair Wear Foundation and developing the C2C work wear was a strong leadership move. The company does show a very high level of available information about the sustainability aspects and activities that can be joined. During the interview the manager appeared acquainted with all the activities selected. Based on the answers in the interview, the score given for the category ‘external orientation’ was also expected to be higher. The medium scores for the categories ‘cooperation’ and ‘learning’ do support the capability of the organization for successfully being a member of the Fair Wear Foundation and develop Cradle to Cradle work wear.

6.5.8. CONCLUSIONS

Company C produces work and safety clothes. Therefore, they operate on a business to business market and limited in the consumer market.

The decisions to participate in social and environmental activities are made by the board of commissioners and the implementation is coordinated by the daily general management. The company does not have a separate CSR or sustainability department. The company is
family owned. The family's active participation in national organizations greatly influence the company's activities, especially the decision to join the Fair Wear Foundation for improving the working conditions in their supply network.

The factors of the contextual interaction theory the company show a large difference between the factors influencing the decision making process for social versus environmental activities. Social aspects are viewed with high importance. At the same time, good opportunities (motivation) to act because the family member was involved in the establishment of the Fair Wear Foundation were available. They also have a high level of information concerning the social aspects and good insight into the feasibility of improvement projects. This is once again because of their involvement in the development of the Foundation (cognition). Also, their limited number of external suppliers and ownership of several suppliers, makes their position strong (capacity-power).

The importance of the environmental activities is clearly lower for Company C than those of the social aspects. Very few opportunities for their products and markets were available (motivation). Also, access to reliable information and insight into the feasibility of environmental activities is problematic (cognition). This notwithstanding, Company C accepted a risk by entering the Cradle to Cradle project. The cooperation and learning capacity of the organization proved strong enough to manage this project successful. To compensate for the lack of expertise they hired experts. The project also was successful because lines are short and suppliers are limited (power).

The scores given to the innovation characteristics in this case, did not explain the decision making process clearly. The medium score for the category leadership does not correspond with important decisions that were made by the management. These decisions clearly show leadership. This can possibly be explained by the typical family owned culture in the company that is not recognized as traditional leadership. The scores for cooperation and learning do show that they are very open and transparent to society. The decisions made also exemplify that they are not afraid to cooperate with NGO's in the multi stakeholder initiative Fair Wear Foundation.

6.6. THE DECISION MAKING PROCESS FOR DEVELOPING SUSTAINABILITY STRATEGIES IN CASE D

6.6.1. INTRODUCTION
As mentioned in 6.2. Company D has been a provider of clothing and home-textiles exclusive produced from natural fibres since 1976. Their headquarters is in Germany and a brand office is in Switzerland. To understand the decision making process concerning their sustainability strategy, the CSR report of 2012/201324 and the social reports for the membership of the Fair Wear Foundation 2001/201225 have been analysed. The Head of the Corporate Responsibility Department was interviewed as well.

In addition to paying attention to sustainability aspects in their own organization this company has also joined and initiated many different programs/activities concerning

24 CSR report Case D, 2012/2013
25 Social Report Fair Wear Foundation Case D, 2012
sustainability in their supply network. More detailed information about the programs, activities and standards discussed in the next paragraphs can be found in chapter 4.

6.6.2. CSR ORGANIZATION AND STRATEGY

Company D was developed as a traditional family owned company. Strong policies for human development and human resource management were present from its start in 1976. Education, health and the balance between private and personal life are seen as important values. The employees council is viewed as very important for ensuring the participation of the employees in company affairs. In 2006, this was rewarded with the basic certificate of the “Career and Family Audit” by the German government. In 2010 this company became the first company in the European Union to be certified as a B(enefit) Corporation in the United States for its commitment to social and environmental standards.

The company has a department Corporate Responsibility that includes a manager and eight employees. Five of these employees are specialists in textiles, materials and chemicals. Three employees have a background in the area of social standards. Unlike many companies, this department is not a staff-department that coordinates and gives recommendations to the line management. The head of the CR department works together with the head of the production to make the decisions. The general management of the company then confirms these decisions. In practice the CR department also has a veto right (Head of Corporate Responsibility Department Case C, 2013. pers. comm., 16th of November 2013).

6.6.3. ENVIRONMENTAL STRATEGIES AND ACTIVITIES IN THE SUPPLY NETWORK

Using natural fibers was a basic goal for the company and its products from the start. They also consciously integrated this concern for nature and the environment in the operations of their locations. The offices and buildings have been designed and built in a sustainable manner, exclusively utilizing natural materials. They have developed environmental policies for the use of water, energy, prevention of waste, package, catering, mobility, as well as other important aspects of daily production life. Environmental and organic labelling schemes are used for the procurement of products. However, they are not certified for the possession of an environmental management system compliable with ISO14001 (Clements, 1996).

As mentioned, Company D makes exclusive use of natural fibres. They also utilize as much certified organic materials as possible. They were involved in the development of the Global Organic Textile Standard (GOTS) and won the organic textile award of 1996. They were the first company in the world to use certified organic cotton. Today, 100% of the cotton they use is certified as organic. Of the other three most important textile materials used, 40% of wool, 56% of linen, and 60% of silk is certified as organic. To achieve these percentages the company has often been involved in agricultural cultivation projects in the producing countries. To support the use of regional wool, they are involved in a sheep project together with German textile and garment Small and Medium Sized Entrepreneurs (SME’s).

---

26 CSR report Case D, 2012/2013

27 CSR report Case D, 2012/2013
In order to ensure top quality of the functionality and the durability of the product this company does accept a certain percentage of elastan (8%) in the products. This is despite the fact that elastan is made from oil and causes detrimental environmental impacts. There is however no alternative. Elastan improves the elasticity of material and is therefore often essential for functionality (Head of Corporate Responsibility Department Case C, 2013. pers. comm., 16th of November 2013).

The recycling of materials has only recently been discussed. Because the use of natural fibres is the focus of this company, the use of recycled materials was questionable. However, because of the increase in the recyclability of natural materials, several pre-consumer waste recycling projects have been initiated. Pre-consumer waste is waste from production. One project has been implemented on small scale for producing bags. Also, Company D has begun several for unsold stocks upcycling projects. A take back program for old clothes in order to produce new clothes out of recycled materials (so called post-consumer recycling), as some other companies do, has not been considered. Because the use of artificial/plastic materials has not been accepted in their products a “recycled” polyester program has not fit into their policy. However, this company has recently considered using recycled (not virgin) polyester specially for their outdoor collection (Head of Corporate Responsibility Department Case C, 2013. pers. comm., 16th of November 2013).

A very strict policy is in place for the use of chemicals for the dyeing and finishing of materials and products. All chemicals that have been classified as carcinogens, persistent, causing bio-accumulation, being toxic for humans and nature, allergens and PVC have been banned. This policy is much harder to abide by for leather goods then other textile materials, however, the same policy is used. To achieve these targets several experimental projects have been implemented. Because their own standards are far beyond the limits of other recognized standards, they do not use standards like OekoTex 100 or the Joint Roadmap towards Zero Discharge of Hazardous Chemicals. Some of their suppliers do have a certified environmental management system (ISO14001) often integrated in a quality management system (ISO9001) but this is not a demand from the company (Head of Corporate Responsibility Department Case C, 2013. pers. comm., 16th of November 2013).

6.6.4. Social strategies and activities in the supply network

In 2002, Company D decided to focus on the improvement of the social conditions in their supply network. In this year they developed a “clean” clothes control system in cooperation with the NGO; Clean Clothes Campaign (CCC).

In 2005 the company decided to join the Fair Wear Foundation (FWF). Since this time they have worked towards the improvement of the control of all the suppliers. In addition to the CCC, within this program Company D works in cooperation with IG Metall; Metalworkers’ Trade Union. All suppliers are checked by the FWF and employees and management of the production centres are trained by the FWF in the Worker Education Program (WEP). In 2010 this company won the best practices award at the Fair Wear Foundation Members day. Because of the high standards of work conditions required by this company as early

28 CSR report Case D, 2012/2013
29 CSR report Case D, 2012/2013
30 Social Report Fair Wear Foundation Case D, 2012
as 2002, this companies policies were not influenced by the accident in Bangladesh in 2013. In 2011 Company D became aware of the importance of the cultural aspects in the FWF programs. As a result, these aspects have now been incorporated into the FWF training. FWF trainings are now tailor-made to the specific cultural aspects influencing production in the country the training is offered\(^{31}\).

In addition to improving the social aspects of their regular supply network, this company also invests in projects concerning community development and training on modern production technologies with natural materials. For example, they educate their suppliers to avoid the "low-wage trap" (Carone et. al., 2004). Also, they worked together with a knitwear enterprise in Bangladesh that initially worked primarily with synthetic fibres. Company D supported them to further develop their spinning, circular knitting, dyeing and manufacturing with organic cotton. They now deliver products to this company and other clients\(^{32}\).

The extent to their activities for positive change is not limited to Bangladesh. As mentioned in 6.7.3, this company is involved in a project to support the use of regional wool in Germany. In this project hand-manufactures woollen textiles produced in local family communities. And in Nepal they have supported a project in which former leprosy sufferers with residual physical disabilities received education, work and income in textile factories\(^{33}\). Most recently, Company D also runs a project in Macedonia to improve the effectiveness of garment production. Instead of increasing the wages of individual employees, the savings and revenues will be used to improve local facilities for the community (Head of Corporate Responsibility Department Case C, 2013. pers. comm., 16\(^{th}\) of November 2013).

6.6.5. THE DECISION MAKING PROCESS CONCERNING ENVIRONMENTAL AND SOCIAL ACTIVITIES

The environmental aspects related to the use of materials for the textiles are at the core of the company. It has been and its committed to the exclusive use of natural materials and non-toxic chemicals since its foundation in 1976. Because the recycling of materials did not fit in this strict policy it was not considered. It is only recently (2012/13/14), with changes in recycling possibilities, that this has become an option. They now run various projects for the recycling of pre-consumer waste and they are considering the use recycled polyethylene for their outdoor collection (Head of Corporate Responsibility Department Case C, 2013. pers. comm., 16\(^{th}\) of November 2013).

This companies list of social activities is also extensive. Since 2002, this company has worked together with the NGO Clean Clothes Campaign. This was prior to the founding of the Fair Wear Foundation. Through this initiative, Company D is working towards improvements of the working conditions in their supply network. When the FWF was established in 2005 they were under the first members. For the last ten years, this company has also been cooperating with this foundation to improve the working conditions in their supply network.

As mentioned the environmental principles were in the roots of the organization when it started so the founders did not require arguments from stakeholders to persuade them to adapt policies that protect the environment. However, more rational environmental

---

\(^{31}\) Social Report Fair Wear Foundation Case D, 2012

\(^{32}\) CSR report Case D, 2012/2013

\(^{33}\) CSR report Case D, 2012/2013
arguments for using recycled materials proved more difficult to implement in the traditional culture of the organization. For this reason, it took a long time before recycled (not natural) materials like polyethylene were accepted for use in the outdoor collection. Arguments for the recycling of post-consumer natural fibres, like organic cotton, have not been accepted at this moment, and thus no policies and projects have been developed to do so.

The attention paid to the working conditions in the supplying factories prior to 2002 was very limited. They did use a kind of code of conduct and when the contract was signed by the suppliers they accepted it blindly without any control. In 2001-2002 they were criticised by the NGO CCC for not putting enough effort in the improvement of the workings conditions in their supply network. Because of the ecologically friendly culture of the company they were very sensitive to this criticism. After an open debate with the CCC, Company D was convinced that they should put more effort into the improvements of the working conditions in the factories that supply them. They then developed a program together with the NGO and joined the FWF a few years later.

The influence of the societal debates on the organization of this company is very unusual. The CR department has great power and can veto proposals concerning CSR-sustainability aspects. The manager of the CR department, together with the manager of the production department decide on important topics.

The general manager must also confirm these decisions but in practice CSR-Sustainability is in the highest possible position in the organization in the decision making process (Head of Corporate Responsibility Department Case C, 2013. pers. comm., 16th of November 2013).

6.6.6. THE CONTEXTUAL INTERACTION THEORY AND THE DECISION MAKING PROCESS

The following conclusions were made about the decision making process concerning the sustainability strategy in Case D, using the structure of the contextual interaction theory for decision making processes.

This company’s “Motivation” can be seen from its foundation. Its start in 1976 reflects the culture of the time with high societal ambitions to make exclusive use of natural materials for clothing. The awareness and insight that their social responsibility needed to be developed to a higher professional level came years later but was easily adapted. The rational approach to the environmental impacts caused by (also the natural) materials and the large improvements that can be made through the recycling of fibers is a recent change.

The “Cognition” concerning the social aspects was very high from the beginning. They were one of the pioneers, joining the Fair Wear Foundation from the start. By joining this foundation, they became very familiar with the social aspects, and the feasibility for improvement projects. The cognitive processes concerning the environmental aspects appeared to be very different when focusing on the use of natural materials (excluding chemicals as much as possible) rather than the more technical environmental approach concerning the recycling of fibers. This is greatly related to the historical core of the company based on only using natural materials.

---

34 Social Report Fair Wear Foundation Case D, 2012
The factor “Resources” (or capacity-power) shows that they have traditional power because they are a company with 343 employees in the European Union and a turnover of 70 million euros in 2011. The power is also seen as being high because the factories that produce for them have done so for many years, are greatly dependent on them and produce high percentages of product for them. This company has few suppliers enabling consistent contact and the feasibility to regularly develop improvement projects with them.

Table 42 summarizes the factors and the influence found on the decision making process concerning participation in social and environmental activities in the supply network of case D.

<table>
<thead>
<tr>
<th>Social Activities</th>
<th>Motivation</th>
<th>Cognition</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>(actors: general manager, head CR department, production manager)</td>
<td>High importance Opportunities in the market</td>
<td>High level of access to information Very familiar with aspects and activities Feasibility transparent</td>
<td>Big Turnover Average number Employees Low number of suppliers High % share</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Activities</th>
<th>Motivation</th>
<th>Cognition</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>(actors: general manager, head CR department, production manager)</td>
<td>High importance Opportunities in the market</td>
<td>High (natural) Medium (recycling) level of access to information Familiar with aspects and activities Feasibility natural) clear, (recycling) less clear</td>
<td>Big Turnover Average number of Employees Low number of suppliers High% share</td>
</tr>
</tbody>
</table>

Table 42: factors influencing the decision making process concerning participation in social and environmental activities in the supply network of case D.

6.6.7. INNOVATION CHARACTERISTICS OF THE COMPANY AND ITS RELATION TO THE DECISION MAKING PROCESS

During their interview, the head of the Corporate Responsibility department was asked to give a score to thirty statements concerning six categories (5 statements each) of innovation characteristics of the company and its supply network. The scores were between 1 (fully not agree) and 5 (fully agree).
The results of the scores of the six categories are shown in figure 11.

Figure 11: Scores of the six categories of the innovation characteristics of the respondent in Case D

The total score is 126, out of max. 150 (30x5), and illustrates that the company has a high innovation capacity level.

The score for external orientation is very high which means that the company is very aware of what society expects from them. Their open minded cooperation with the NGO Clean Clothes Campaign corresponds greatly with this high score. The other categories score at a medium to high level and support the open learning and cooperation culture that fits this traditionally family owned company. Leadership also scores at medium/high level. This score may not be high because the management possesses much power/autonomy for important decisions and the organization is characterized as flat and low hierarchy. The projects concerning their employees and the community projects in the countries they produce also support the organizational culture that represent these scores.

6.6.8. CONCLUSIONS

This company has a strict policy on the use of natural materials for clothing and textiles. This environmental awareness and responsibility is clearly reflected in the position of the Corporate Responsibility Department in the organization. The CR department has a strong position and can exercise veto right over the production manager if necessary.

The factor motivation of the contextual interaction theory shows that the importance for both the social and ecological/natural aspects was high long before other companies felt this. They developed their own opportunities and utilise very few certification schemes and labels. GOTS and FWF are the exception because Company D was involved with these initiatives from the beginning as leading companies in the sector.

The cognition factor illustrates a high level of information, experience and insight into the feasibility for traditional natural-ecological materials and the social aspects. However, they have less information and insight concerning the rational environmental aspects, life cycle
analysis and recycling opportunities. The hesitation to use recycled post-consumer material for new products is an example of this struggle.

Concerning the *capacity-power*, this company often has a long and strong relation with their suppliers which enables them to greatly control the circumstances. They often invest in local community development projects which makes the relation even more intense.

The scores of the *innovation characteristics* show that this company has a high innovation capacity. All categories score at a medium to high level and because the company has a very flat organization with high autonomy of employees, leadership is not always recognized as such. The company also shows a high transparency towards society and NGO’s. Being one of the first members of the Fair Wear Foundation and being involved in the process of the foundation becoming a professional organization is in line with these characteristics. The attention paid to the wellbeing of the employees here in the EU and the involvement in community projects in the producing countries shows their strong external orientation towards societal themes and their commitment to people.

6.7. CROSS-CASE ANALYSIS

6.7.1. INTRODUCTION

The case studies were conducted to provide more insight into the decision making processes concerning the social and environmental activities in the supply network of a clothing company. A literature review showed that the innovation characteristics of the company could explain why a certain strategy was chosen. A survey supported this hypothesised relation for the social activities. This was however, not true for the environmental activities. Concluded was that companies do not have an integral sustainability strategy but strategies and selected activities differ for the environmental and the social aspects. Therefore, more insight was needed in the decision-making process. The development of a strategy for the social activities may follow a different route within the organization as the decision making process concerning the environmental strategy does. Furthermore, other actors and factors could be involved or play a different role in this process.

In this section the results of the four cases are compared from the perspective of the Contextual Interaction Theory and from the perspective of the Innovation Characteristics. The Innovation Characteristics were also used to make comparison with the results of the survey possible. Hereby, general conclusions can be drawn. The organizations of the four cases selected are all keenly aware of the sustainability debate in society, they are all active in several environmental and social programmes and activities. They can therefore be seen as frontrunners in the sector. They do differ on the type of clothes produced, ownership structure and size. In the sections 6.3-6.6 the decision making processes concerning sustainability aspects in the supply network of four clothing cases were described and analysed.

With regards specifically to at the decision making process for social versus environmental activities, it can be concluded that in three cases the decisions to join activities for the social aspects were made years before the decisions concerning the environmental aspects. Without going deeper into the actors and factors in the decision making process this conclusion still demonstrates a clear difference in time between the decision making
processes. Only the fourth case D started their business with a high environmental profile from the beginning, as well as related activities. The integration of social activities followed at a much later time.

In the next sections the results of the single case-analyses are summarized and discussed and conclusions are drawn. The results were used to give scores ( + = low, ++ = medium and +++ = high) to the level actors were involved and the factors that playing a role in the decision making process.

6.7.2. ACTORS IN THE DECISION MAKING PROCESS

As can be seen in table 43, the general management, the production manager and the CSR or sustainability management played an important role in the decision making process for both the environmental and social activities in the four cases. The marketing/sales department and also the procurement department play a minimal role in the decision making process concerning the social activities in two cases. However, they play a large role in the decision making process for environmental activities that are related to the product. This is not true for the environmental activities related to the production phase of the product.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Actors: management, production, CSR-sustainability</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td>Actors: marketing/sales, procurement</td>
<td>+++</td>
<td>+</td>
<td>+++</td>
<td>+</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
</tr>
</tbody>
</table>

+++ = played an important role ++ = medium role + = hardly any role

Table 43: Actors and the level of influence in the decision making process for social and environmental activities in cases A, B, C and D

The production department leads in decisions made about working conditions and the environmental aspects during the production phase in all four cases. As mentioned, the decisions made concerning the social aspects were made much earlier as the environmental aspects in three cases. The decisions to improve the environmental performance during the production phase are greatly influenced by opportunities (see also 6.7.3 “motivation”) of projects and technologies offered within certain financial boundaries.

In three of the four cases, separate CSR or Sustainability departments were present. Together with other departments they make and implement the decisions made. In one case, all CSR or sustainability tasks were integrated into the regular management structure.
while in another case, the CSR department has a strong veto over management decisions. Concluded is that the theme CSR or sustainability has found an independent position in all four organizations and that they are always involved. They do not however, always have the power to take the decisions alone.

The marketing and sales departments in cases A and B are important for environmental decisions that are directly related to the product. For decisions concerning the social aspects during the production phase, however, they rarely play a role in two out of the four cases. And as mentioned, the production management focuses more on the environmental aspects of the production phase and not or less on the environmental aspects of the product itself. Often the CSR or sustainability department will take initiatives concerning environmental impacts of the product. However, the marketing/sales department will be involved when, for example, a take back systems for used clothes and new products based on recycled material are being considered. Old clothes in the shop and new products made out of recycled material can conflict with their marketing strategy and image. The case studies show that the marketing and sales departments sometimes have the power to stop a proposed plan because of this conflict. In cases C and D, the role of the marketing and sales department is very different. This difference is influenced by the fact that case C operates in a business to business market for working clothes and case D in a special niche market for clothes made out of natural fibers.

The procurement department is important for decisions concerning the sourcing of organic cotton, recycled or other more sustainable materials. They are responsible for the quality and the price. For this reason, they may not want to take the risk and responsibility for buying more sustainable materials. These materials are not always certified and thus may have a lower quality and higher price as conventional materials.

6.7.3. THE CONTEXTUAL INTERACTION THEORY AND THE DECISION MAKING PROCESS CONCERNING THE SOCIAL AND ENVIRONMENTAL ACTIVITIES

The factors of the contextual interaction theory were used to gain more insight into the decision making process concerning the social and environmental activities in the four cases.

Table 44 summarizes for the cases A-D the levels of the influence of these factors in the decision making process for the social and the environmental activities.
Table 44: Factors of the Contextual Interaction Theory (CIT) influencing the decision making process for social and environmental activities in cases A, B, C and D

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation importance</td>
<td>++</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
<td>++</td>
<td>+++*</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Motivation opportunities</td>
<td>+++</td>
<td>+</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
<td>+++*</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Cognition access to information</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
<td>+++*</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Cognition aspects and activities</td>
<td>++</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
<td>++</td>
<td>+++*</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Cognition feasibility</td>
<td>+++</td>
<td>+</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
<td>+++*</td>
<td>++</td>
<td>+++*</td>
</tr>
<tr>
<td>Resources turnover</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Resources employees</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Resources number of suppliers</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Resources share at suppliers</td>
<td>+</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>+++</td>
<td>+++*</td>
<td>+++*</td>
<td>+++*</td>
</tr>
</tbody>
</table>

+++ = very high/very important    ++ = medium/medium importance    + = low/low importance
* = use of natural fibers   ** = recycling of fibers

As can be seen in the table the influence of the different factors on the social and environmental strategies in the four cases does not show a clear picture. That is why the factors are discussed and explained individually below.

The importance of the factor motivation was medium or high in all four cases. In two cases, this was higher for the social aspects than the environmental aspects. In one case it was the other way around and the use of natural materials was of higher importance. This difference was not found with respect to the recycling of materials and is the results of the company's founding core value of exclusively using natural materials.
The motivation factor also appears to be related to the opportunities for improvement offered in the sector. Despite the fact that environmental aspects show, in general, a lower importance than social aspects activities, they are still actively participated in because of opportunities offered. These opportunities seem to focus primarily on the environmental aspects of the production phase and not the product itself. Also, the opportunities for using natural fibers are easier to find for Case D than opportunities for recycling materials.

Concerning the cognition, all four companies show very good access to information and are all very familiar with most of the social and environmental aspects. However, the factor of feasibility, and a lack of clarity here for, sometimes prevents them from joining a project. The social activities are more process oriented and decisions on detailed actions can be taken later. For some environmental projects subsidies were available encouraging companies to join for pragmatic, opportunistic reasons. However, decisions for joining strict certification schemes without knowing the economic feasibility are not favourable. Once again, Case D shows that the influence of this factor is very different for the environmental aspects: use of natural fibers for new clothes versus the recycling of used clothes.

The resources or power factor of the contextual interaction theory shows that the traditional power aspects of turnover and number of employees are important in all four cases. In addition to these traditional aspects, the number of suppliers and the percentage they produce for the specific company are also important. Also, a long term relation with these suppliers and experiences with cooperative improvement-innovation projects are important elements here. Two of the cases had a large number of suppliers producing a limited percentage of product for them. One of these cases has already lowered their number of suppliers and the other case is working towards this goal. This strategy for reducing the amount of suppliers is used to strengthen the company's position and can be used to improve social and environmental conditions at the suppliers locations. The other two cases had a low number of suppliers with a high percentage producing for them from the start. Therefore, controlling the situation has been much easier.

6.7.4. THE INNOVATION CHARACTERISTICS AND THE DECISION MAKING PROCESS CONCERNING THE SOCIAL AND ENVIRONMENTAL ACTIVITIES

In all the four cases the innovation characteristics were measured by asking the person interviewed to give scores to the level the thirty statements (appendix I) represent the situation in their organization. In one case the scores were given by two persons.

The thirty statements cover six categories and table 45 shows the results of the scores for cases A, B, C and D.
Table 45: Scores given to the categories of innovation characteristics during the interviews for the cases A, B, C and D

As can be seen in the table the scores given to the innovation characteristics in the four cases do not show a clear picture. That is why the results for the six categories they are discussed and explained below.

The ‘external orientation’ scored medium or high level in all four cases. Also, the interviewed persons and related activities show that they are all aware of what is transpiring in society with regards to sustainability in their sector. In the survey, this specific category proved to be significantly related to knowledge of and participation in the social activities. This high level of external orientation also corresponds to the high level of the factors motivation and cognition found in the analysis in 6.7.3.

The ‘learning’ category scored a medium level. This corresponds to the capacity possessed by all four cases to be learning organizations. With the exception of Case A, the categories ‘cooperation’ and ‘autonomy’ scores were the same level. Together they characterise the capability to adapt to changing societal circumstances. These characteristics make it possible for these companies to be front-runners in the sector.

All four cases have medium to high scores for the category ‘result driven’ showing their ambition to perform. The results for the category ‘leadership’ are confusing. In four cases the scores for this category were low or average while the developed strategy and related
activities on specific sustainability aspects suggested strong leadership. In one case, this low score for leadership appears to be caused by the company being a flat organization. This resulted in that decisions were made by the management team and this was not recognized as strong leadership.

That organizational characteristics play a role in the selection of a social strategy is supported by the fact that the two cases that joined the multi stakeholder initiative Fair Wear Foundation (FWF) are both family owned companies. Joining the FWF proves that they are not afraid to be transparent to society because NGO’s are participating in the foundation. The other two (not family owned) cases joined either a business driven initiative or developed their own code of conduct. This suggests that there may be a relation between the scores given to the level of innovation characteristics and being family owned. This can however not be analysed because of the low number of cases.

6.7.5. CONCLUSIONS

The analysis of the cases show that companies started to develop social strategies and activities in their supply network years before the strategies for environmental aspects and that the subject CSR and sustainability has found an independent position in clothing organizations. But this position it does not always represent the power to dominate the decision making process.

The decision making process for social activities follows a different route within the organization that the decision making process concerning the environmental strategy does. Environmental aspects are greatly related to the technical aspects of the product and therefore other arguments and actors play a role in the decision making process. The marketing and sales departments are not involved in the decision making process concerning social activities in the supply network while their role in the decision making process concerning the environmental aspects of the product is very important.

Knowledge and awareness of social and environmental aspects is often present but leads only to activities when opportunities to improve are available. And information necessary to analyse the feasibility of a selected strategy-activity can be difficult to obtain and can therefore have impact on the decision making process.

The number of suppliers and the percentage they produce for the company are important factors for improving the conditions in the production factories. For this reason companies actively reduce the number of suppliers and increase the percentage that they produce for them.

The innovation characteristics concerning learning, cooperation and autonomy influence the selected strategy and a strong external orientation results in a monitoring of the societal debates. That is why they are consequently aware of what is transpiring in society. The factor leadership did not show to have a strong relation with the sustainability strategy which may be explained by the organization structure and culture of the cases selected.

The factors of the Contextual Interaction Theory for analyzing the decision making process within the four cases gave new insights in these processes. Specifically the differences between the influence of the factors and the roles of the actors in decision making processes for single sustainability activities gave this insight. Even though the factors “motivation” and “cognition” show an overlap with several of the innovations characteristics the scores given
to the innovation characteristics only present a static picture of the whole organization and do not include the actors involved.
7. DISCUSSION

7.1. INTRODUCTION

This chapter summarizes the conclusions from chapters 2, 5 and 6 to answer the central research question integrating the sub-conclusions garnered by the research methods used. These summarized results can be found in section 7.2.

The literature review and the empirical research were conducted in the years 2010-2013. For this reason the results are compared to more recent insights. To achieve this, recent publications from 2014/15 concerning the implementation of sustainability in supply networks have been selected and analyzed. The results are described in section 7.3.

Section 7.4. presents recommendations for further research and section 7.5. discusses the societal value of the results of the empirical research.

7.2. THE SUMMARIZED ANSWER TO THE RESEARCH QUESTION

The research question formulated in chapter 1 was:

“How can the variety in sustainability strategies found in the supply networks of individual “focal” companies be understood?”

Based on the results of the literature review, it was concluded that the innovation characteristics of the focal company could possibly explain the difference in strategies and related activities mentioned in this question. The models and frameworks found rarely included internal characteristics and primarily explained the strategies by pointing at the external factors causing the so-called external pressure. A new framework has been developed integrating innovations characteristics of the focal company and cooperation characteristics with its partners in the supply network. The innovation characteristics together were defined as the innovation capacity of the focal company to react to external pressure. The assumption behind the development of the framework was that when a focal company has a low capability to react to external pressure it will not be able to join ambitious programs and therefore develop a less offensive or even a defensive strategy. But when a focal company has a higher capability (innovation capacity) it will join these programs and be able to develop a more offensive strategy.

This framework and the assumptions mentioned have been tested with a survey. The innovation capacity of the focal company, based on an integral score of the innovation characteristics, did show a significant positive relation with the cognition of and the participation in social activities in the supply network. This positive relation was dominated by the categories ‘external orientation’ and ‘cooperation’ from the six categories of innovation characteristics. Companies that showed external orientation, were willing, and had experience with projects that needed cooperation, showed a more ambitious strategy and related activities concerning the social aspects in their supply network. These results supported the assumption that was made concerning social aspects.

But this significant positive relation was not found for the environmental aspects. For the more technical, product and material related environmental aspects, no relation was found at all. A weak positive, but not significant relation was found for the organizational
environmental activities. The results support the conclusion that the strategy for the social aspects can differ greatly from the strategy found for the environmental aspects and that integrated sustainability strategies towards the supply network do not exist. These results also lead to the assumption that the decision making process for the development of a sustainability strategy and related activities for social versus environmental aspects may follow a different route and is influenced by other factors and actors within the organization.

To understand the reasons behind the results found in the survey, the case studies were conducted using a decision support model for analysis. Based on these studies it was concluded that the decision making processes concerning the social aspects in the supply network do indeed follow a different route in the organization of the focal companies. Different internal actors are involved. Also, other internal factors influence the decision making process. In addition to the CEO and the CSR and Sustainability department or manager, the production management plays an important role in the decision making process for participation in activities for improving social aspects. The procurement department is also involved in the decision making process because they have the contacts with the production industries that make the products. They can select them on the quality of the working conditions or help them to improve these conditions. The marketing and sales departments are not involved because active communication towards consumers about social aspects in the supply networks was rarely found in this research. The communication department plays a major role in this process because of the communication with other stakeholders, rather than the consumer. They feel the pressure to positively communicate about the actions taken and are, for example, involved in the strategic choice to join a business or a multi stake holder initiative. This is because such multi stake holder initiatives mean the NGO’s will get detailed, sometimes sensitive, information about the company. The results concerning the actors involved results provided further insight into the reasons behind the significantly positive relationship between the innovation characteristics of the focal company and the engagement with activities concerning the social aspects in their supply network that were found in the survey.

With regards to the environmental aspects, the technical, quality and production related departments dominate the decision making process with their technical expertise. They want to be sure that the organic cotton and/or the recycled textile fibers can meet the same strict quality standards as the traditional garments. Or, that the less toxic chemicals can really create the same shiny colors that remain beautiful after the clothes have been washed several times. Even though the marketing and sales department would like to tell a positive story about sustainable products there is hesitation stemming from the risk of lower quality. Also, some environmental measures, like using recycled material, can actually have a negative impact on the consumer. They may not accept recycled materials in their clothes because of the fear of lower quality and poor hygiene. Recycled material has a poor image in the fashion market. Also, the influence of the designer and worldwide trends in fashion such as colors, patterns, and worn look jeans, can conflict with the rational technical environmental approach. The case studies show that environmental aspects rarely play any role in the design phase of the fashion products. The design for recycling principle which has become common practice for many industrial products has not yet been accepted or applied in the fashion sector.

Concluded is that the innovation characteristics of the focal companies in the clothing sector are related to the strategies and related activities concerning the social aspects found in
their supply networks. However, the strategies and related activities for the environmental aspects do not appear to be related with the innovation characteristics of the focal company in the same way. An integral sustainability strategy does not seem to exist and the factors and actors influencing the decision making process concerning the participation in environmental versus social activities/programmes can differ greatly.

The decisions made concerning the technical environmental aspects are strongly influenced by the expertise of the technical professionals when quality is guaranteed and the image of the products correspond with the marketing strategy. This may explain why no significant relation was found between the general innovation characteristics and these technical environmental aspects.

7.3. NEW INSIGHTS CONCERNING THE IMPLEMENTATION PROCESS OF SUSTAINABILITY IN SUPPLY NETWORKS

This section compares the summarized results of the empirical research conducted between 2010 and 2013 with more recent results from other researchers. This was done by conducting a literature review in the years 2014 and 2015. The results are compared to the conclusions that were drawn in section 7.2. During these last years the question concerning how the implementation process of sustainability in supply networks could be understood has been raised, discussed and analyzed by many researchers and approached from many different angels.

This is also illustrated by the fact that the framework that was developed presented in chapter 2 and published in 2011 in the Journal of Cleaner Production (van Bommel, 2011) has been cited many times in several journals over the last four years. In addition to the Journal of Cleaner Production (Tomasin et. al., 2013; Amini and Bienstock, 2014; Souto and Rodriguez, 2015; Vance et. al., 2015; Silvestre, 2015) articles were published in a wide range of journals such as:

- the International Journal of Technology Management and Innovation (Pereira de Carvalho and Barbieri, 2012; Leodir Löbler et. al., 2012),
- the European Journal of Innovation Management (Yarahmadi and Higgins, 2012),
- the International Journal of Production Economics (Ageron et. al., 2012; Beske et. al., 2014; Golini et. al., 2014; Chen et. al., 2014; Subramanian et. al., 2015),
- the Journal of Strategic Management (Tollin et. al., 2012),
- the International Journal of Integrated Supply Management (Hochrein et. al., 2012),
- the Journal of Purchasing and Supply Management (Meehan et. al., 2014),
- Supply Chain Management: An International Journal (Gualandris et. al., 2014),
- the International Journal of Supply Chain Management (Masoumik et. al., 2014) and
- the TQM journal (Cosimato et. al., 2015)

The conclusion that the innovation characteristics of the focal company can explain the capability to act and that they show a significant positive correlation with the participation in activities concerning the social aspects in the supply network is supported by other approaches found in recent literature. It appears that the search for internal (innovation) characteristics of the focal company explaining the implementation strategies found has
widened the last years. *Five* of these approaches are analyzed and compared with the results of the empirical research.

Based on stakeholder and contingency theories, an innovation centered first approach to sustainable supply chain management was proposed by Silvestre (2015) and was connected with the TCOS (technological, commercial, organizational, societal) uncertainty framework (Hall et al., 2011). This *first* approach is in line with the conclusions drawn from the empirical research. In this publication however, no differentiation was made between the social and environmental aspects and activities. In fact, they focus primarily on the environmental aspects using the principle of cleaner production. Taking this into consideration, their conclusion supports the conclusion of the empirical research as a whole but not specifically for the social or the environmental aspects.

A *second* approach concluded that uncertainty avoidance and social trust affect supply chain collaboration directly. The research did not focus on sustainability or social and environmental aspects but on supply chain collaboration as a whole. Concluded was that for successful collaboration focal companies must trust the actors in their supply network and the other way around. When this condition is not fulfilled, companies will not dare to be open and transparent, they will avoid cooperation with these actors and use a more command and control approach towards them (Qu and Yang, 2015). This approach is defined as a closed inter-organizational system while cooperation leads to an open inter-organizational system. These results clearly support the conclusion of the empirical research concerning the implementation of the social aspects but once again neglect the differences found concerning environmental activities and strategies. It can be argued that supply chain collaboration will not be influenced by the factors uncertainty avoidance and social trust in the same way for all subjects as concluded in this publication (Qu and Yang, 2015).

A *third* approach explaining the dynamics in supply networks from a focal company perspective found in the literature is the “dynamic capabilities” theory. Dynamic capability is defined as: “the capacity of an organization to purposefully create, extend or modify its resource base” (Beske et al., 2014). This capacity enables the organization to provide greater value to the customer and other stakeholders than their competitors. This approach shows not only a relation to the economic performance of the company but has also been recognized in relation to other performances like social and environmental concerns and could therefore also be seen as an approach for analyzing the implementation process of sustainability in supply networks! The five categories mentioned are: Supply Chain Conceptualization; Partner Development; Knowledge Management; Co-Evolving and Reflexive Control (Beske, 2012). In a framework presented these five Dynamic Capabilities categories were connected to the five Sustainable Supply Chain Management categories: “orientation towards supply chain management and sustainability”, “continuity”, “collaboration”, “risk management” and “proactivity”. The relation between the dynamic capability categories and the sustainable supply chain management categories was tested in the food industry. The results show a strong relation between the categories. The eight distinctive capabilities are distinguished for successfully implementing sustainability in supply chain management. These eight capabilities are: (1) Knowledge Assessment, (2) Knowledge Acquisition, (3) Ability Development, (4) Search, Selection and Integration of Partners, (5) Supply Chain Link Foundation, (6) Product and Process Development, (7) Relationship Management, and (8) Reflexive Control (Beske et al., 2014). Although these eight capabilities seem to differ from the definition of innovation capacity used in the
empirical research, the elements of the six innovation categories used largely overlap with the elements of the eight aspects of the dynamic capabilities theory.

A fourth approach found for understanding the implementation process of sustainability in supply networks looked at the role of internal and external governance mechanisms. Sustainable supply chain governance mechanisms are defined as practices, initiatives and processes used by the focal company to manage relationships with a) internal functions and departments and b) their supply chain members and stakeholders with the aim of successfully implementing their corporate sustainability approach. Two relevant approaches characterize governance mechanisms, namely collaboration and formalization. Using six cases studies and analyzing using, contingency factors, strategic alignment perspective and the resource based view three sustainability profiles have been developed on the basis of their level of collaboration and formalization. These profiles are: sustainability leaders; sustainability practitioners and sustainability traditionalists (Formentini and Taticchi, 2014). The contingency approach helps understand the strategic development of corporate sustainability strategies. This approach emphasis the nature and structure of organizations and states that they can take a number of forms which are related to several contingencies. Comparing the elements that are used to characterize the nature and structure of organizations shows an overlap with the innovation characteristics used in the empirical research of this study. Thus, the results of this research also show that internal characteristics as part of a contingency are related to developing a proactive strategy (leaders) or a more defensive (traditionalists) strategy (Wu et. al., 2014).

A fifth approach for understanding the influence of factors on the focal companies environmental and social management approaches in their supply chains uses three categories The research was conducted in the clothing industry and they distinguished three categories of factors called drivers: external demands, internal drivers and supply chain characteristics. The relationship between the different drivers and the strategies for an environmental and a social management strategy were analyzed using structural equation analysis. Important conclusions drawn from this analysis are that the external demands (NGO’s) and the social management strategy are more strongly related than the external demands are to the environmental management strategy. Another conclusion is that the internal drivers have a much stronger relation with the social management strategy than with the environmental strategy. This last conclusion reflects the significant relation between the (internal) innovation characteristics and the strategies and activities relating to social aspects discussed in the empirical research. This supports the conclusion that integral sustainability strategies are rarely found and that different factors and actors influence the strategy development for environmental and social aspects (Freise and Seuring, 2015).

Concluded is that recent research results support the conclusion that the capability of a focal company to act is related to the strategies and related activities found for the social sustainability aspects in the supply network. This capability is defined by different principles like uncertainty avoidance, social trust, dynamic capability, internal drivers and innovation strength. Analyzing these principles shows that the components greatly overlap in internal organizational characteristics.

For the environmental strategies and activities the empirical research did not find the same relation as that present in the social aspects. Some recent research supports the conclusion that the relationship between the environmental aspects and strategies is
different and less strict with the internal organization characteristics. However, the literature review also shows that this difference is insufficiently described and discussed. Often research on this topic focuses on sustainability as a single entity.

7.4. RECOMMENDATIONS FOR FURTHER RESEARCH

Based on the recent literature it was concluded that companies do not develop integral sustainability strategies in their supply network but that strategies differ for the different elements part of the wide definition of sustainability. During the empirical research the decision making processes for social and environmental activities were analysed as two individual categories. But also within these categories differences were also found. These differences found between the activities within the group of environmental activities in the decision making processes are illustrated by activities found:

+ for the improvement of the environmental aspects during the production phase,
+ to reduce the environmental impacts from the raw materials (cotton etc.) used, and
+ for recycling the materials after they have been used,

Based on these differences, it is hypothesised that the supply chain dynamics will take different routes depending on the subject or goal. It is therefore recommended that more research be conducted to analyze the differences in the supply chain decision and collaboration processes depending on the sustainability subject to be improved. The nature of the subject, the related aspects and the different actors involved should be analysed in more detail to understand the specific dynamics in the different supply chain processes.

The research for this study was conducted in the clothing industry. Only a limited number of companies could be analysed through the survey and the case studies conducted. Each participant was selected because they are front runners of approximately the same size differing in type of clothes produced and their specific markets. To obtain more insight in the innovation characteristics and the decision making processes within the context of sustainability these differences should be analysed in more detail in future research. Differences to be considered are: business to consumer versus business to business, fashionable markets for specific target groups versus the general clothing markets, female versus male clothing, clothing for children versus clothing for adults, main stream markets versus niche-markets etc.

As mentioned in chapter 1, the process of the implementation of sustainability in industrial supply networks is currently taking place in many different sectors. A specific sector discussed early was the consumer electronics. This industrial sector shows many similarities with the clothing industry. They too face many societal issues in their global network and many activities to improve them are being conducted. The presented results of the literature review in section 7.3. support the conclusions found in the empirical research in the clothing sector. This is based on research conducted in others industrial sectors as well. However, more insight into the differences found between the innovation characteristics of the industrial sectors on and the decision making processes within the focal companies is needed. Future research should be conducted into the differences between these industrial sectors. This research has the potential to be complicated because it must take extensive differences in the external pressure into account. These differences can, for example, be
the role of government legislation, or the societal value of specific industrial products. The European Union has developed a strict policy for the end-of-life phase of consumer electronics. Unfortunately however a policy like this does not exist for clothing. Sustainability aspects of eatable products (food-industry) are valued very different by society than products that are worn (clothes) or used (consumer-electronics).

7.5. Societal value of the results

Society’s expectations from companies concerning the improvement of the relevant sustainability aspects in their supply network is increasing. A question that is often raised is how to quicken the process of the implementation of sustainability in global industrial networks. The research conducted for this dissertation leads to three important insights that can be used to develop a more specific approach for stimulating this process by different stakeholders in society.

The first insight focuses on the various stakeholders involved. They use their position and power to put pressure on the companies. This external pressure also exists in the clothing sector and is caused by many stakeholders simultaneously. The consumer is often seen as the most important stakeholder for demanding improvements through the use of their buying power. And yes, the companies also see them as being important. However, many other stakeholders like shareholders-owners, suppliers, NGO’s, governments are of significantly greater importance. Thus, activities of focal companies to improve environmental or social aspects in the supply network can, for example, be stimulated by an NGO or shareholder and not even be communicated to the consumer. Recognition that societal changes in the supply network does not have to follow the consumer demand is increasing but often not accepted in the marketing disciplines. NGO’s already act according to this idea and are changing their strategies accordingly. They are decreasing their activities that influence consumer behavior and are now focus on companies and the other stakeholders themselves.

A second insight is that integral sustainability or corporate social responsibility strategies were not found in this research. Companies appear to develop different strategies and activities for the different themes addressed in societal debates. These activities differ in priorities and level of ambition. Despite the fact that, in the public debate, the development of Corporate Social Responsibility-CSR policies and strategies in business suggests an integral approach, this was not supported by the results of the empirical research. Concluded is that the different themes ask for a tailor made approach. Integral policies should not be expected. This conclusion contradicts with the development of integral CSR guidelines such as ISO 26000 and integral CSR reporting guidelines like GRI. The societal demand for integral strategies is understandable as it allows a natural division of ‘responsible’ or ‘irresponsible’ companies. But reality is much more complex and because integral strategies are not found society will have to accept that companies can only be held responsible for their policies and activities per CSR theme. This can result in companies behaving responsibly for a specific societal theme and less responsibly or irresponsibly for another.

The third insight concerns the capability of the company to act. As mentioned, external pressure is required to make companies aware of the need to act but it will not in itself a guarantee that companies will develop a pro-active strategy concerning the improvement of sustainability aspects in their supply network. The results of this research shows that
companies will need a certain level of capability to react in a pro-active way. Without this capability they will likely develop a defensive or limited risk-based strategy. Putting pressure on a company that does not have the capability to act forces them to react in a defensive way and will not help to improve the sustainability aspects in their supply network. The capability is based on the innovation capacity and the research shows that the most relevant characteristics are the external orientation, cooperation and the learning capacity. Consequently, external pressure is required for change but before a proactive approach from companies can be expected, the organization must become more open for societal debates, willing to learn and cooperate with stakeholders and supply network partners and transparent about their activities. Rather than applying public pressure on companies, stakeholders must stimulate them to join improvement programmes, and help them become more cooperative and transparent. This approach will help accelerate the process of the implementation of sustainability in industrial supply networks. Some NGO’s have already adapted this as an important strategy in combination with the changing approach towards the consumer (Doh and Teegen, 2003). This does lead to an ambivalent debate within NGO’s. Some members of NGO’s define this new strategy as ‘sleeping with the enemy’. They resist applying more pressure to the companies and state that helping the companies to become more open to society is not the role of NGO’s (Dahan et. al., 2010).

This third insight implies a societal expectation that businesses will change their traditional competitive characteristics into a more open minded culture capable of cooperating with all stakeholders. The future business leaders are educated in the business schools at the institutes for higher education all over the world. To make this change within the companies possible the business schools must integrate these important aspects into their curricula and train their students to be open to society, cooperative and willing to learn together with their stakeholders and all their partners in the supply network.
REFERENCES


Jo-In. (2007). Codes and compliance under scrutiny. A final report of the Joint Initiative for Corporate Accountability and Workers’ Rights (JO-IN). Turkey Project.


McNitt, J. I., Lukefahr, S. D., Cheeke, P. R., & Patton, N. M. (2013). Rabbit production (No. Ed. 9). CABI.


APPENDIX I: STATEMENTS USED FOR MEASURING THE INNOVATION CHARACTERISTICS

External Orientation

1. the organization has insight in the developments and trends in the fashion and clothing sector
2. employees of the organization have hardly direct contact with clients, supplies and partners
3. the organization wishes to present itself active in and around the sector in debates, media and conferences
4. the organization compares itself with others concerning functioning and performance
5. the organization does not address sensitive topics in the sector

Cooperation

6. different departments/disciplines within the organization regular work together on common goals
7. the organization has little knowledge over the goals and the functioning of the partners in the supply network
8. the future policy of the organization will be developed in cooperation with partners in the supply network
9. there is a great trust among the organization and the partners in the supply network
10. electronic databases are not or hardly linked with databases outside the organization

Learning

11. mistakes are seen as learning moments, are made visible and used to develop structural improvements
12. the organization implements slowly and hardly ever fully the “plan, do, check act” circle
13. education and training are used to increase the autonomy of the employees and to strengthen the bilateral communication skills
14. taking initiative and showing flexibility belong to the most important criteria by recruitment and the development of employees
15. the organization hardly ever participates in pilot-projects concerning new methods for assessing processes and products
**Leadership**

16. managers inspire and motivate employees by setting the good example

17. managers protect employees and reduce unnecessary bureaucracy and overhead

18. the management develops the learning capacity of the organization and reserves means in the budget to support this

19. the management is *hardly* prepared to accept risks

20. the management bases the success of the organization on the added value to society by the organization

**Autonomy**

21. employees are being treated as internal partners

22. the organization provides the opportunities for unconventional methods for cooperation and development

23. *only limited* means and time are available for innovation. The organization is *hardly* prepared to invest in it.

24. unnecessary rules and juridical barriers will as much as possible be removed and reduced

25. the organization has a relative horizontal organizational structure

**Result-driven**

26. the organization shows *only limited* accountability about the results, priorities and learning effects

27. employees clearly contribute to the organizational goals at the long term

28. the organization involves by the assessment of the result also the added value for the network partners

29. the organization judges their results in relation to the front runners in the sector. It always uses good operating practical examples from other organizations

30. the organization uses future scenarios to determine her effectiveness for the long term
APPENDIX II: THE ELEVEN INFLUENCING FACTORS FOR PARTICIPATION IN SUSTAINABILITY ACTIVITIES

- government with laws and regulations
- government with agreements and covenants
- government with information and subsidies
- demand of consumers
- demand from partners in the supply network
- wanting to have a positive image
- request of a shareholder/owner
- driven by competition
- pressure from NGO’s
- risk of reputation loss
- reduction of costs
APPENDIX III: ELEVEN SELECTED SUSTAINABILITY ACTIVITIES IN THE CLOTHING SECTOR

European ECO-Label

Oekotex-100 Standard

EKO

GOTS

ISO14001

Recycling

BSCI

SA8000

FWF

Fair Trade

Made-By
APPENDIX IV: THE QUESTIONNAIRE

The survey was conducted in the spring of 2010 and the questionnaire was send by email to a group of 91 clothing companies that have been participating in a survey held by MODINT and the ING economic agency about CSR in the clothing sector in 2008. More details about the survey are explained in chapter 3 and the questions used, divided in four parts, are presented here.

Part 1: General questions

In this first part the respondents were asked to answer the following four questions.

1. What was the turnover of your company in 2008?
   - 0-1 million euro
   - 1-5 million euro
   - 5-10 million euro
   - 10-50 million euro
   - >50 million euro

2. How many employees does your company have in the Netherlands?

3. In which country is the headquarter of your company situated?

4. Which of the seven business models shown in the figure below characterizes your company best?

<table>
<thead>
<tr>
<th>Business Model</th>
<th>Design</th>
<th>Production</th>
<th>Distribution</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column-company</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head-tail company</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private label</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brand</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subcontractor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network company</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail company</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Part 2: Innovation Characteristics**

In this second part the respondents were asked to give a score to the level a statement described the situation in their organization. They were asked to give the score for the organization as a whole and not only for their own position, department or their personal opinion. The levels that could be given ranged between 1-5.

1 = fully disagree ……………………….. 5 = fully agree.

In several statements the “chain-partners” were mentioned and explained was to the respondents that “chain-partners” can be any organization that somewhere in the supply chain (upstream and downstream) can be seen as a partner. Thirty statements representing six categories were put forward. The categories used are “external orientation”, “cooperation”, “learning”, “leadership”, “autonomy” and “result-driven”.

The statements used are presented in Appendix I

**Part 3: Influencing Factors**

In this third part respondents were asked to give a score to the level of influence they thought a mentioned factor has on the attention their organization pays on social and environmental issues in their supply network. Asked was to give separate scores for social and environmental issues! Explained was that environmental aspects could be related to the resources, the production phase as well the end-of life phase of the clothes. And that the social aspects cover many subjects like child labor, working overtime, minimum wage, contracts, freedom of association, minimum wage, occupational health and safety. The scores that could be given range between 1-5.

1 = no influence ……………………….. 5 = very much influence

The eleven influencing factors that were put forward in this part of the questionnaire are presented in Appendix II.

As can be seen three influencing mechanisms for the government to influence the companies are being distinguished. The government using their traditional power by making laws and regulations; the government negotiating with companies leading to voluntary agreements and covenants and the government stimulating the companies by giving them information and subsidies.

**Part 4: Sustainability Strategy and Activities**

In this fourth part respondents were asked to formulate the sustainability strategy of their company in their own words. The results are presented in Appendix VI. Besides this general question respondents were confronted with eleven selected activities as presented in Appendix III. For each activity the respondent was asked if the organisation knew the activity. If yes, if they were joining or might be joining the next years or would not consider joining at all. The answers lead to a five point scale showing the level of acquaintance with and participation in each activity.
APPENDIX V: CASE STUDY PROTOCOL FOR ANALYSING DECISION MAKING PROCESSES
CONCERNING SUSTAINABILITY STRATEGIES

The case study protocol was developed to analyze the four cases of clothing focal companies selected. The protocol distinguishes the five phases of the decision making process, the five actors and functions involved, the three main characteristics based on the Contextual Interaction Theory (CIT) and the scores for innovation characteristics. Below these five elements of the case-study protocol are described more in detail.

Phases of the decision making process

During the interview the respondent was asked to explain the decision making process for sustainability activities selected by analysing the documents of the case-company. The following phases were used to reconstruct the decision making process.

- Identification of the problem/issue
- Setting importance/priority
- Developing possible strategies/activities
- Weighing the alternatives (feasibility, cost versus benefit etc.)
- Selecting a strategy/activity

Actors and functions in the decision making process

Besides the phases and the arguments used during the decision making process also the position of the actors and their functions were analysed. The respondents were asked to explain the role of the actors in the process. The following five actors were distinguished.

- CEO and Management
- Sales and marketing
- Production
- Procurement
- Sustainability and CSR

Characteristics of the decision making process based on the Contextual Interaction Theory

The decision making processes in the four cases were analysed using the following characteristics:

- Motivation; importance, opportunity
- Cognition; access to, aspects and activities, feasibility
- Resources; turnover, number of employees, number of suppliers, share at suppliers
Innovation characteristics of the company

Scores were given by the contact person in the company to thirty statements for the six categories: external orientation; cooperation; learning; leadership; autonomy and result driven. The thirty statements were the same as explained in part 2 of the questionnaire in Appendix IV and they can be found in Appendix I.
APPENDIX VI: SUSTAINABILITY STRATEGIES AS FORMULATED BY THE RESPONDENTS

In part 4 of the online questionnaire (Appendix IV) respondents were asked to formulate the sustainability strategy of the company in their own words. Twenty nine respondents did this and the formulated strategies were:

- Sustainability in the supply chain is a basic condition, Fashion & Education is the leading theme. Where possible, we want to link the Sustainable Strategy to strategic business targets.
- Unclear
- We sell products that cause as low as possible environmental impacts and are produced in a social responsible way.
- Today’s pressure for surviving is the main factor determining our sustainability strategy.
- No strategy.
- We have developed an agricultural project for bio-cotton together with Solidaridad and we have developed a machine that can dye garments without water.
- No strategy.
- Sustainability in our company is very much focusing on prevention of waste and conscious use and treatment of materials/products.
- We participate in a CSR pilot project at our industrial site
- Concerning sustainability we try to use less energy for production
- Corporate responsibility by actions, sponsorships and through our employees
- We try to work with sustainable resources as much as possible
- We use as much as possible organic certified materials and produce at factories having international accepted certification for working conditions
- We define the impact of the organisation and develop action where needed
- All products are being certified according to the Oekotex 100 standard and we develop “green” products further by using more organic cotton and bamboo
- No opinion
- We introduced the most important aspects in the handbook for the producers. Examples of these aspects are the use of toxic chemicals for dyeing, separation of waste and the use of packaging. We offer projects with organic cotton or recycled textiles on request of our customers
- Improving projects for sustainability aspects are initiated by our clients. Simple and cheap measures are implemented at the short term. We are also involved in
European projects concerning the reduction of materials, waste minimization, energy saving and the recycling of resources

- We are a member of the Fair Wear Foundation
- We use sustainable materials
- We have a clear CSR policy, are a member of the Fair Wear Foundation etc. etc.
- We are member of the Fair Wear Foundation. We want to bring all products to the certified level of Oekotex and GOTS. We have a full-time CSR professional in our staff
- Sustainability is part of the organisation but we do not really communicate about it
- No strategy
- We always search for certified materials
- No strategy
- We introduce a sustainable, natural textile fiber for expanding and replacing the cotton fiber. For every activity the sustainability aspects are being considered
- We use natural fibers as much as possible
- We are a follower
Harrie van Bommel is born on the 18th of May 1957 in Bladel, the Netherlands and finished his master of Environmental Hygiene in 1984 at the University of Wageningen. After finishing his master degree he worked some years at the University of Wageningen and the Radboud University in Nijmegen as coordinator for the environmental research programme at the Science Shop.

In 1988 he started working as a teacher Environmental Hygiene at the HBO-Bachelor of Environmental Science programme “Nieuw Rollecate” in Deventer. From the beginning of the nineties he has been specialising from the field of Environmental Hygiene towards Environmental Management in Industry and later towards Sustainability and Business. He is now senior-lecturer/researcher at Saxion University of Applied Sciences and involved in applied research, bachelor, minor and master programs in the field of Sustainable International Business.

He has for many years been working part-time on the PhD research presented in this dissertation in cooperation with the Research Group Sustainable Development at Saxion University of Applied Sciences and the Twente Centre for Studies in Technology and Sustainable Development (CSTM) at the School of Management and Governance, University of Twente, both in the Netherlands.

**Recent and relevant publications:**


Many different theories are found to explain how industrial companies implement sustainability strategies in their supply network. However, the question why companies in a similar position choose different strategies remains under discussed. It is this question the research of this study seeks to answer using the clothing industry as an example. The results of a survey performed for this study show that specific innovation characteristics of focal companies are significantly related to the strategies found for improving the social aspects but not for the environmental aspects. These innovation characteristics represent the capability to act. The differences found between the strategies for the improvement of social versus the environmental aspects were analysed using in depth case-studies. The results of this research show that the decision making processes follow different routes and that different actors and factors are involved. This insight should be used for speeding up the implementation process.