

Department of Thematic Studies  
Campus Norrköping

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# From Farm to Fabric

## A Measurement of the Sustainability in a Textile Production in Northern India

*Amanda Borneke & Emelie Oldensjö*

Bachelor of Science Thesis, Environmental Science Programme, 2015

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**Institution, Avdelning**

Department, Division  
Tema Miljöförändring,  
Miljövetarprogrammet  
Department of Thematic Studies – Environmental change  
Environmental Science Programme

**Datum**

Date  
2015-05-18

**Språk**

Language

- Svenska/Swedish  
 Engelska/English

\_\_\_\_\_

**Rapporttyp**

Report category

- Licentiatavhandling  
 Examensarbete  
AB-uppsats  
 C-uppsats  
 D-uppsats  
 Övrig rapport

\_\_\_\_\_

**ISBN**

ISRN LIU-TEMA/MV-C--1506--SE

**ISSN****Title of series, numbering**

Bachelor thesis from the Environmental Science programme in Norrköping

**Serietitel och serienummer**

C-uppsats från Miljövetarprogrammet i Norrköping

**Handledare**

Veronica Brodén Gyberg

**URL för elektronisk version**

<http://www.ep.liu.se/index.sv.html>

**Title**

From Farm to Fabric – A Measurement of the Sustainability in a Textile Production in Northern India.

**Titel**

Från gröda till tyg – En mätning av hållbarheten i en textilproduktion i norra Indien.

**Författare**

Amanda Borneke & Emelie Oldensjö

**Abstract**

A value chain for a textile production can be described as transforming a crop into a textile, then turn the textile into a fabric, then create a product from that fabric - a horizontal chain from farm to fabric. This paper analyses the different activities within a value chain of a sustainable textile production in India to understand where, and how, sustainable value is added at each stage. The transformation from farm to fabric involves many stages such as farming, yarn manufacturing, dyeing, fabric manufacturing, finishing and storage. The case study was performed as a) explaining the triple bottom line theory (3BL) and how it is used as a theoretical framework b) defining the key processes of Avani's textile production in India c) visualising the value chain of Avani's textile production based on semi-structured interviews and d) discussing the global textile industry with the 3BL to measure sustainability. The social bottom line in Avani's textile production is the most sustainable dimension and the economic sustainability is not far behind. The environmental dimension is the weakest measured due to the lack of information to the employees. Future research with long-term measurement with dimensions as environmental, economic and social need to be done in order to refine and define sustainability in textile production but most of all to the counteraction of environmental devastation.

**Sammanfattning**

En värdekedja för en textilproduktion kan beskrivas genom att omvandla en gröda till en textil, textil till ett tyg och sedan skapa en produkt av det tyget - en horisontell kedja från gröda till tyg. Denna uppsats analyserar olika processer inom en värdekedja i en hållbar textilproduktion i Indien för att förstå var, och hur, ett hållbart värde sker i varje process. Omvandlingen från gröda till tyg innebär många steg, såsom jordbruk, garnstillverkning, färgning, tygtillverkning, efterbehandling och lagring. Fallstudien genomfördes genom att a) förklara teorin triple bottom line (3BL) och hur den används som ett teoretiskt ramverk b) definiera de viktigaste processerna för Avanis textilproduktion i Indien c) visualisera värdekedjan från Avanis textilproduktion baserat på semi-strukturerade intervjuer och d) diskutera den globala textilindustrin med 3BL för att mäta hållbarheten. Den sociala grunden i Avanis textilproduktion är den mest hållbara dimensionen och den ekonomiska hållbarheten är inte långt efter. Den ekologiska dimensionen är den svagaste uppmätta på grund av bristande information till de anställda. Framtida forskning med långtidsperspektiv med dimensioner som miljömässiga, ekonomiska och sociala måste göras för att förfinas och definiera hållbarhet i textilproduktion men mest av allt för att motverka miljöförstöring.

**Keywords**

3BL, India, textile production, sustainability, value chain analysis.

**Nyckelord**

3BL, Indien, textilproduktion, hållbarhet, värdekedjeanalys.

## **i. Abstract**

A value chain for a textile production can be described as transforming a crop into a textile, then turn the textile into a fabric, then create a product from that fabric - a horizontal chain from farm to fabric. This paper analyses the different activities within a value chain of a sustainable textile production in India to understand where, and how, sustainable value is added at each stage. The transformation from farm to fabric involves many stages such as farming, yarn manufacturing, dyeing, fabric manufacturing, finishing and storage. The case study was performed as a) explaining the triple bottom line theory (3BL) and how it is used as a theoretical framework b) defining the key processes of Avani's textile production in India c) visualising the value chain of Avani's textile production based on semi-structured interviews and d) discussing the global textile industry with the 3BL to measure sustainability. The social bottom line in Avani's textile production is the most sustainable dimension and the economic sustainability is not far behind. The environmental dimension is the weakest measured due to the lack of information to the employees. Future research with long-term measurement with dimensions as environmental, economic and social need to be done in able to refine and define sustainability in textile production but most of all to the counteraction of environmental devastation.

Key words: 3BL, India, textile production, sustainability, value chain analysis

## ii. Sammanfattning

En värdekedja för en textilproduktion kan beskrivas genom att omvandla en gröda till en textil, textil till ett tyg och sedan skapa en produkt av det tyget - en horisontell kedja från gröda till tyg. Denna uppsats analyserar olika processer inom en värdekedja i en hållbar textilproduktion i Indien för att förstå var, och hur, ett hållbart värde sker i varje process. Omvandlingen från gröda till tyg innebär många steg, såsom jordbruk, garntillverkning, färgning, tygtillverkning, efterbehandling och lagring. Fallstudien genomfördes genom att a) förklara teorin triple bottom line (3BL) och hur den används som ett teoretiskt ramverk b) definiera de viktigaste processerna för Avanis textilproduktion i Indien c) visualisera värdekedjan från Avanis textilproduktion baserat på semi-strukturerade intervjuer och d) diskutera den globala textilindustrin med 3BL för att mäta hållbarheten. Den sociala grunden i Avanis textilproduktion är den mest hållbara dimensionen och den ekonomiska hållbarheten är inte långt efter. Den ekologiska dimensionen är den svagaste uppmätta på grund av bristande information till de anställda. Framtida forskning med långtidsperspektiv med dimensioner som miljömässiga, ekonomiska och sociala måste göras för att förfinas och definiera hållbarhet i textilproduktion men mest av allt för att motverka miljöförstöring.

Nyckelord: 3BL, Indien, textilproduktion, hållbarhet, värdekedjeanalys.

### iii. Acknowledgments

Sustainability is a current buzzword, both in popular culture and in environmental science. The drift for discussing this buzzword in Indian textiles came from a project idea with Rashmi Bharti titled “from farm to fabric”. An introductory meeting with the founder made the research possible by the generous support of several organisations: the Swedish institution at Linköping University and Avani volunteer organisation in the Kumaon region. Among the individuals who provided encouragement and support, we are grateful to Johan Hedrén, Emma Carlsson and Julia Bardh. We would also like to thank the staff and the interviewees at the Avani organisation for their assistance, especially the co-founder Rajnish Jain. In addition to the staff, the following persons enriched our thesis: Rajnish Pant, Sabeet Ram, Dheeraj Pant, Kailash Upadhyay, Deepa Bhoriyhal, Prahba Upreti and Lalita Bora. Of course, we greatly appreciate the efforts of the interview translators, thank you Ankita Dhaneshwarwal, Poshali Goel and Priyanka Sakuja. We would especially like to thank our Swedish supervisor Veronica Brodén Gyberg, and our scrutinizer Erik Glaas, who provided excellent assistance in preparing the manuscript.

*Amanda and Emelie*

*In Tripuradevi, India at 2015-04-10*

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## 1 Introduction

The environmental devastation is an alarming problem, which everyone should be concerned about. The textile industry is one of the major sources of environmental devastation, and reduction of pollution from the global fashion industry is a topic that has interested researchers in the past years (Ngai et. al., 2012).

Unsustainability in the global fashion industry has become a key issue where the greatest challenge is to achieve balance between environmental impact, poor social conditions and economic justice towards sustainable development (Caniato et. al., 2012). This has led to a considerable paradigm regarding the social and environmental actions of organisations (Govindan et. al., 2012) suggesting a long-term measurement with dimensions as environmental, economic and social (Bruntland, 1987; Choudhury, 2013). The dimensions has increasingly turned out to be momentous to research resulting in legislation expanding the responsibility of organisations and development theory to support sustainable managerial decision making (Govindan et. al., 2012) at global, regional, and local levels (Dou et. al., 2014).

Developing countries have a quest to meet basic human standards and conquer obstacles as poverty, hunger, inequality, unemployment (Kothari, 2014) and gender empowerment (UNECE, 2012). India is measured as the world's third biggest ecological footprint and is already using twice of the country's bio-capacity of resource (Kothari, 2014), but also one of the biggest textile producers in the world. Environmental propositions are not mandatory yet in India and it is a new demand overall for the nation's industries. Small firms dominates the textile industry nevertheless they still play a significant part of the national economy (Baskaran et. al., 2012; Kothari, 2014).

The pressure to change came mainly from actors like non-governmental organisations (NGOs), government regulators and community activists making a lot of firms commit to sustainability practices (Ageron et. al., 2012; Hassini et. al., 2012). The NGO Avani works against environmental impact as they only use natural colours and natural fibres in their textile production. It is believed that Avani's establishment in India have empowered the people away from poor social conditions while bringing economic justice to their region. The case study Avani is an example for how small and big textile productions can work against unsustainability towards sustainable development with aspects as economic, social and environmental performance.

To create a holistic perspective of the unsustainability in the fashion industry, an analysis of the processes in the production chain can be made to find where the unsustainability lies. The first coined combination of sustainable performance in production chains can be thought of as a triple bottom line approach with the economic, environmental and social aspects (Klassen & Vereecke, 2012). Several studies has been made to investigate how textile chains can be combined with the triple bottom line approach (such as Diabat et. al, 2014; Govindan et. al., 2012; Klassen & Vereecke, 2012; Rieple & Singh, 2010 etc.), yet the research is lacking since



there is hardly any research that includes the north Indian sustainable textile industry. The NGO Avani can then be a representative textile producer because of the establishment's location, but most of all, Avani can be a representative textile producer to understand how sustainability in textile productions can be expanded and fight the environmental devastation in developing countries.

## 1.1 Purpose and research questions

The purpose of this case study is to increase the understanding of how sustainability in textile productions can expand. The claimed to be sustainable textile industries in India have increased dramatically the past years, which makes the subject relevant for the matter. The case study includes triple bottom line theory, qualitative semi-structured interviews and value chain analysis as theoretical approach and methods. Continuously the result from this thesis will be compared with previous studies to see if the result reflects in the old arguments or if new arguments can be made. This thesis can then learn others to apply sustainable development theory in organisations to improve their sustainability values.

### 1.1.1 Research Questions

- ◆ What are the key processes in the NGO Avani's textile chain?
- ◆ To what extent can these processes contribute to sustainable development?

## 1.2 Structure of paper

*Previous research* aims to provide a deeper understanding of scientific research and to describe the development of sustainable textiles in India and why certain stakeholders fail to engage in sustainable operations. *Case study Avani* gets even more specific and focus on the case study in this thesis as explaining the enterprise's success so far. *Triple bottom line theory* enlightens the theoretical conceptual framework, which describes the economic, environmental and social dimension but also discuss the strength and the weaknesses with the theory. *Methodology* includes inductive method, choice of organisation, explanation of semi-structured interviews, use of value chain analysis and methodology discussion. *Delimitations* describe the theoretical and methodological boundaries that have affected this case study. The *Analysis* starts with a visualisation of the value chain, summary of interviews and is then combined with the three sustainability dimensions. To make it easier the sustainability analysis is divided into three different sections according to the dimensions and ends with a summering discussion. *Concluding discussion* review all above-mentioned information as value chain, summering discussion and previous scientific research. This part advance the thesis in a way that problems in the textile industry get easier to see therefore easier to solve. The part ends with a recommendation of improvement that textile industries may apply if they want to increase the sustainability in their production and a description of future scientific research. *Conclusions* then give consistent and concrete answers to the research questions and to what extent the key processes contribute to sustainable development.

## 2 Previous scientific research

The textile sector in India fronted three crucial scales of development that integrated the sector through global value networks (1) pressure to meet labour standards (2) environmental standards and (3) exacting quality standards. This got answered by respective regions in term of employment, where female workers dominate and are the lowest paid in the industry (Dolan & Tewari, 2001).

Industrial production has during the last century steadily replaced traditional handmade production all over the world. For a country like India, this meant a loss of traditional market for craftspeople and artisans who clamber to compete against multi-cooperation ushered in by advanced technology, maximising volume of manufacturing and machinery. Indian artisans therefore developed an understanding of sustainable product making from the extraction to production, to distribution, to consumption and disposal, creating the beginning of a sustainable production chain (Wood, 2011). Paradoxically, artisans are deeply seen as living in the past, rather than dynamic enterprisers of the present and future. The sensed connection between sustainability and craft has proven to give employment opportunities in the crafts sector, which are the second largest employer of people living in rural areas in India (Wood, 2011).

Wool, silk and minerals are raw materials that are not only locally available but also friendly to the environment (Wood, 2011). Despite the accelerating interest of sustainable techniques in textile production, there is some disarray to what the definition organic really defines. Organic crops are crops that are farmed without the use of any synthetic chemicals such as fertilisers and pesticides. But farming is only one of the stages in garment manufacture. Other stages that can be included in the garment manufacturing are the yarn manufacturing stage, the fabric manufacturing stage, the fabric finishing stage, garment cutting and stitching and at last but not least the retailing stage. Working with organic methods has both social and environmental benefits coming from the use of sustainable methods (Rieple & Singh, 2010).

The reason why smaller producers fail to engage with ethical trading initiatives is connected to social and political structures at the regional level. Little attention has been given towards the capacity of fair and ethical trading ventures, so that social and economic justice at the regional level can be achieved (Norris, 2013).

This is relevant for the thesis since the case study qualify in the above-mentioned scales and one of the main goal for the organisation is to empower women, build up social structures at a regional level and keep traditional handmade crafts alive. The connection between triple bottom line and value process systems is that they both take into account the economic, environmental and social aspects of the entire system, which are all important if the traditional handmade crafts will challenge the industrial production.

### 3 Case study Avani

This thesis features the textile producer Avani as a case study to explain and exemplify problems, but also opportunities, with a sustainable production of textiles. Avani started in 1997 and has continued their work ever since in the Kumaon region, in the Uttarakhand district, at the foot of the Himalayas in northern India. The organisation was chosen because they had qualifications that made them seem as a good example for a sustainable textile production. This chapter are divided into four sections explaining each quality as a motivation for why Avani was chosen as a case study in this thesis.

#### 3.1 Non-governmental organisation

Avani is a NGO (Avani, 2015a), which can be seen as a strength since it might be easier to highlight economic, environmental and social dimensions therefore they focus on not only profit but people and planet as well. This also means that Avani is a non-political organisation and is not driven by any ideologies that might steer their intentions in decision-making. It can be believed that this quality is helpful, as the organisation might seem to be open-minded when given solutions or recommendations.

#### 3.2 Natural dyeing

Avani can be stated as a good example of a sustainable textiles as the yarns are dyed in natural colours that are extracted from common plants in the area, such as marigold flowers, turmeric, madder, myrobolan, eupatorium, walnut hulls, onion skin, pomegranate rind etc. Avani ensure that all the dyeing process of the textile production are eco-friendly and do not damage the soil, water or surrounding nature (Avani, 2015b).

#### 3.3 Natural fabric materials

The preservation and revival of the traditional craft of weaving, spinning and natural dyeing are the foundation of Avani's textile production. The quality with Avani is that the spinning and weaving is only done with natural fibres; like wool, pashmina and hemp; and this has been the traditional skill of the community that Avani is part of. Avani's enterprises encourage the creation of contemporary products with the natural fibres and have introduced a processing of wild silks, like *eri* and *muga* (Avani, 2015b; Wood, 2011).

#### 3.4 Green energy and livelihoods

Avani have combined new green technologies and combined them with traditional techniques for example solar powered spinning wheels to ease physical hardship (Avani, 2012). This means that Avani has improved the working conditions for artisans and at the same time not compromised the low environmental impact of the organisations traditional craft practices that do not consume resources such as electricity (Wood, 2011). Avani has worked with the development of solar energy usage and the organisation has supported sustainable livelihoods through the empowerment of rural communities (Avani, 2015a). They also have an unique water recycling system on the campus, making all water used in the textile processing, like dyeing and washing, recycled up to 80% (Avani, 2015b).

## 4 Theoretical framework

This chapter introduces the theoretical framework of this thesis, which are the triple bottom line theory or 3BL. Here is a full description of the theory, economic measures, environmental measures, social measures and ends with a theoretical discussion. The theoretical discussion debates critique, the fourth P and argues for the measurement chosen in this thesis.

### 4.1 Triple bottom line theory

Sustainability has often been mentioned as a goal for NGO's during the past decade as it is difficult to measure the degree how much an organisation is being sustainable. In the mid-1990s, the environmentalist John Elkington strove to measure American corporations' sustainability performance by creating a new framework. The result became the so-called 3BL, one of many ways to make a simplification of measuring sustainability, which is exactly what will be done in this thesis. The accounting framework differed from the traditional financial measures, return on investment and shareholder value to include social and environmental dimensions along the interrelated dimensions of the 3Ps: people, planet and profit (Hall & Slaper, 2011). This theory was used to identify where the sustainability value can be measured strongest and where the sustainability is lacking.

A lot of different sectors have been growing an interest in 3BL and many already use the framework to evaluate their sustainability performance (Hall & Slaper, 2011). It can be seen as a sketchy model about how to construct a net value that has not only informative but relevant content while identifying problems and benefits actions by companies (Tullberg, 2012). This helped the analysis to find problems and highlight direct actions that could be significant to the sustainability in the production.

“3BL captures the essence of sustainability by measuring the impact of the organisation's activities on the world... including both its profitability and shareholder values and its social, human and environmental capital” (Hall & Slaper, 2011).

The trick with 3BL is how to measure it, and how to do so correctly as there is no universal standard method for the calculation. This can be useful for the user as it allows adaption to the general framework to the needs of different sectors. Therefore the 3BL is suitable for cases and projects both at large geographic boundaries and small geographic scope like a small town (Hall & Slaper, 2011). More recent conceptualisations of the triple bottom line are explained as three important principles; economic growth, social equity and respect for the environment (Hall & Slaper, 2011), which is exactly what is looked upon in this thesis. To implement sustainable development and address the environmental impact on future generations and companies, Hall and Slaper (2011) suggests that measures through academic discourse can be stated as followed.

### 4.2 Economic measures

The variables should be dealing with the economic bottom line but most of all the flow of money in the production chain. For this thesis it could be personal income, cost of

underemployment, establishment churn, establishment sizes, job growth, employment distribution by sector, percentage of firms in each sector, revenues by sector contributing to gross state product, expenditures etc. (Hall & Slaper, 2011).

### **4.3 Environmental measures**

The variables ought to be measurements of natural resources and also reflect the potential influences to its viability. Examples in the thesis include electricity consumption, fossil fuel consumption, solid waste management, hazardous waste management, change in land use/land cover, sulphur dioxide concentration, concentration of nitrogen oxides, priority pollutants, excessive nutrients and so on (Hall & Slaper, 2011).

### **4.4 Social measures**

The variables are connected to social dimensions of a community or region. The variables discussed in the thesis could be for example unemployment rate, female labour force participation rate, median household income, relative poverty, average commute time, violent crimes per capita, health-adjusted expectancy and percentage of population with a post-secondary degree.

### **4.5 Theoretical discussion**

It is of high relevance each P or dimension is weighting equally when applying this approach to get a detailed depiction of the sustainability as possible. To look at only one dimension, or one P, is not relevant. The balance is to highlight the most important one and motivate why (Hall & Slaper, 2011).

Several scientists apply that there is little academic research on 3BL and that the theory remains not fully developed (Norman & MacDonald, 2004; Pava, 2007; Tullberg, 2012). Tullberg (2012) means that the academic non-performance of developing the 3BL is considered a major problem, with the reason that there is limited academic interest. This is certainly troublesome since the theory is now commonly used in business circles (Pava, 2007).

Tullberg (2012) have a forecast of adding a fourth P, Progress, to 3BL turning it into a 4BL approach therefore increasing the likelihood of improvement. The idea about expanding 3BL is because that companies with 3P lacks of a dimension considering significant reporting of company's accomplishments (Tullberg, 2012). To add is that Pava (2007) believes that 3BL could be used as a second annual report for firms, giving them an ethically defensible supportive material for their sustainable work.

This research will focus on specific index per dimension as follows a. Economic measures (profits) include money flow, business climate factors, personal income, establishment churn, establishment size, job growth and business diversity b. Environmental measures (planet) include the environmental impact, natural resource flow, change in land use/cover, energy consumption, water quality, waste management and working environment c. Social measures (people) include health, training, education, equity, access to social resources, well-being, life

quality, social capital, female labour force participation rate, relative poverty, average commute time, crimes per capita and the general life expectancy. Data for these measures are collected by qualitative interviews at the local or community level of Avani. Hopefully, this research will contribute to academic performance with the 3BL theory, making the academic interest wider in the future.

## 5 Methodology

This chapter includes research design, inductive method, choice of organisation, semi-structured interviews and how the research is using value chain analysis. The point of this chapter is to present the methodologies and how they are used in the thesis. The chapter ends with a methodology discussion that discusses reliability, validity, research ethics, translator ethics and ethical implications.

### 5.1 Inductive method

The research has been performed as inductive reasoning, which the premises seek to supply strong evidence of the truth (Copi et. al, 2007). This means that the research has emanated from interview material collection of empirical evidence and 3BL, where the result is combined with former scientific research (Grønmo, 2006; Thurén, 2007). While the conclusion of a deductive argument is certain, the truth of the conclusion of an inductive argument is probable, based upon the evidence given (Copi et. al, 2007). A deductive study would have meant that the data would have been more closed to a certain conclusion. This research is based on inductive arguments that are conducted by data more likely than theory making the study open for conclusions (Thurén, 2007; Spicker, 2011).

### 5.2 Choice of organisation

The volunteer organisation Avani claim to be long-term thinking in sustainable solutions. The organisation has written three annual reports in English (Avani, 2012) but little academic research about the organisations sustainability has been made. It is therefore interesting to perform interviews on what the employees have to say about the sustainability value in Avani's textile production chain.

#### 5.2.1 Choice of participants

First there needed to exist a sketch of the organisations textile chain to identify key processes and activities for the organisation. This was made with former scientific research in common value chains in addition to find the most accurate title for each activity or process but also for the researchers to understand the flowchart of the organisation. The snowball sampling is a method used in this thesis for selecting key individuals with expert knowledge (Rieple & Singh, 2010; Niinimäki & Hassi, 2011). The snowball sampling was used in this thesis for choosing the participants of this case study. The snowball began with the founder Rashmi Bharti, which led us to the textile production manager Rajnish Pant that then led us to the other key individuals in the production processes. All six key processes, as can be seen in figure 1, were confirmed by one of Avani's CEO's, Rajnish Jain.

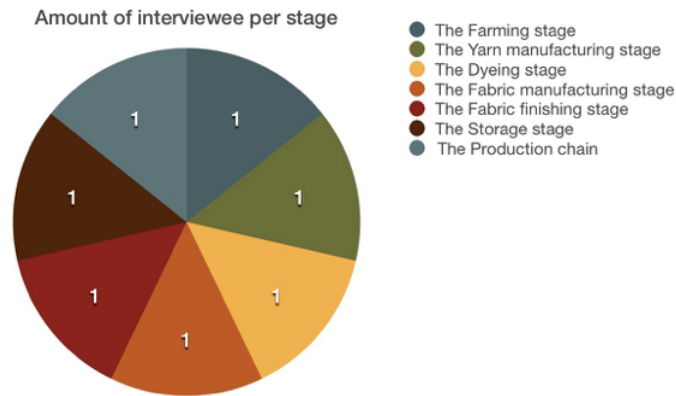


Figure 1 shows that each interviewee in the research were chosen from different stages in the production and also one interviewee that represented the entire production chain.

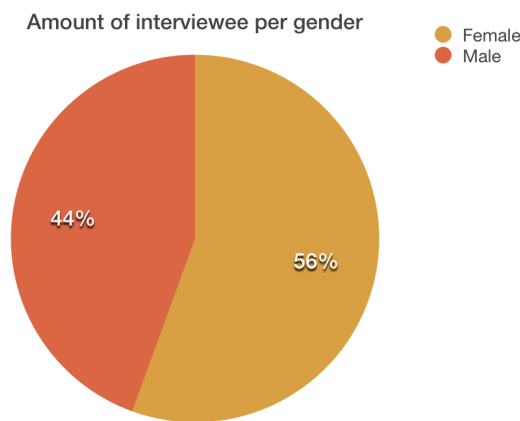


Figure 2 indicates that all the interviewees' gender from the stages are divided by 50/50 plus the single male describing the entire production chain.

The point was that every key process, or key person, would represent one link in Avani's entire textile production chain (see figure 1). Six out of seven interviewees are anonymous due to the risk of being exploit. The gender of the interviewees where nothing that was considered when choosing them, we strived for a representative picture of how the genders are divided at Avani's workplace, which turned out to be almost 50/50 (see figure 2).

### 5.3 Semi-structured interviews

Qualitative semi-structured interviews were executed so that the interview could have a fluent conversation where answers, follow-up questions and propositions came both from the interviewer as well as the interviewee. Semi-structured interviews are disposition to affect the participants' opinions and propositions as little as possible even though it is a two-way conversation (Bryman, 2012). Disadvantages with semi-structured interviews are that the conversation can be messy and unorganised (Bryman, 2012), however the purpose with the interview was to make the interviewees' speech as free as possible so this was not considered a problem in the research.



### *5.3.1 Interview guide*

Research was done on the subject, the 3BL theory and value chains before making the semi-structured interview guide and performing interviews. This inspired how the interview guide was established so it would be as relevant for the research as possible.

Two different interview guides were developed with different purposes, one for the in-depth interview (see Appendix 1) and the second for the short interviews (see Appendix 2). The questions were made semi-structured in both guides so that possibilities for relevant follow-up questions were possible. In the beginning of the interview, there was a presentation of both the interviewers, the purpose of the thesis, the interview itself and how the participant contributes to the research.

Collecting personal information about the participant and whether anonymity was desired got confirmed at the start of the interview. Afterwards, the interview continued with warm-up questions, followed with different categorised questions and if necessary follow-up questions. The interviews ended questions asking the interviewees if they had anything more to add if the interviewees had anything more to add that had not been brought up.

### *5.3.2 Revision of the material*

In qualitative research, the researchers are frequently interested in not only what people say, but also how they say it. Therefore, interviews are normally audio-recorded and transcribed as soon as possible, because memories have a natural limitation (Bryman, 2012). The interviews were recorded with a cell phone, but all visible recording equipment may make the interviewees uncomfortable (Graham et. al., 2007). It is also good to record with the reason that then the interviewer can be alert to what is being said and easily focus on follow-up questions instead of focusing on making notes (Bryman, 2012). The interviews took place at the different departments at Avani's main centre in Tripuradevi.

After every interview the transcription of the material started directly, by both interviewers, (see Appendix 3). Transcribing of the recordings was done as soon as possible to remember body language, face expressions, interruptions, background noise etc. that are lost when recording.

Even though time-consuming, recordings were transcribed by both interviewers to identify relevant components in Avani's value chain in addition to create a sustainable value chain combined with the triple bottom line approach. Both transliterations and value chain summaries was then compared with each other to later on be discussed in the theoretical lens of the triple bottom line approach. These three steps; double transliteration, double value chain analysis and comparison of all; was made to decrease potential mistakes as well as the interviewers' opinions.

## **5.4 Using value chain analysis**

A commodity chain analysis (CCA) is described as a way to understand the relationship and links between actors and activities involved in a network of labour and production which in

turn results in commodities (Bair, 2009). There are many organisations that have used the commodity chain approach to map connections and to ensure that production processes are carried out in a desired way. This could be ensuring worker safety, concerns about health, organic farming methods, preservation of local biodiversity or to secure fair wages. CCA can be used as a variety of concepts that describe highly internationalised production processes for manufactures such as clothing (Bair, 2009).

One notion of CCA is called value chain, introduced by Michael Porter in 1985. Value chains are according to Porter, a tool for analysing the relationship between actors and activities *within* an organisation (Bair, 2009). In other words, it can be used to understand different processes of where, how and why value is added at each stage in a production (Rieple & Singh, 2010). This research will only be conducted *within* an organisation, value chains are sometimes referred to as global supply chains or global value chains when analysing linkages *outside* an organisation (Bair, 2009). A value chain for a textile production can be described as transforming a crop into a textile, then turn the textile into a fabric, then create a product from that fabric - a horizontal chain from farm to fabric (Rieple & Singh, 2010). As a value is created through a horizontal network of producers and consumers, different processes may contain their own internal logic for maximising the value, showing hidden webbing between producers, middlemen and consumers of textile products in circulation (Norris, 2013).

In line with value added to the chain advances the environmental and social burden during different stages of production, making it easier to discover them (Müller & Seuring, 2008). It is typical to choose about five or six primary activities connected to the production when doing the analysis (Rieple & Singh, 2010). In this thesis, six primary stages have been deconstructed, namely: the farming stage, the spinning stage, the dyeing stage, the fabric manufacturing/knitting stage, the fabric finishing/garment cutting and stitching stage and at last but not least the storage stage.

Due to missing research this study will focus on interlocking Slaper & Hall's (2011) triple bottom line approach with Bair's (2009) value chain analysis in addition to create a sustainable value chain on a regional eco-friendly textile industry in northern India. Further recommendations and opportunities for how the regional eco-friendly textile industry can increase their sustainability is something that will be investigated, discussed and concluded.

## **5.5 Methodology discussion**

How can quality be ensured in qualitative research? Reliability and validity are two important aspects that have been taken into consideration in the thesis (GAO, 1992). The definitions about validity and reliability in this study are based on Golafshani's (2003) definitions.

The responsibility lays on the researcher that the material is of high consistency and accuracy. Reliability can be defined as to which extent results are consistent, accurate and if they can be replicated under similar conditions. If participants in interviews were to be interviewed again, their answers should give a similar conclusion (Golafshani, 2003). To prove this study's reliability all the material that were used were read and written for the thesis

individually, then combined. To make sure the researcher's opinions were not involved, the transcription were made by both individually and then compared with each other. The same method was used for the analysis. Each author analysed individually and then analysed together. The interview guide for the short interviews remained the same so the foundation was the same for all interviewees participating in the short interviews. There is a risk that the transcriptions were judged differently, but by comparing and discussing the transcriptions together made the transcriptions more reliable. However, it is important to keep in mind that the interviews might still have been analysed incorrectly.

Even though a researcher can replicate the research again, it is important to remember that the method itself may not be valid. Validity is a term, which determines if the research truthfully measures what it is supposed to do or how reliable the research results might be. For researchers to know about the validity of their subject searching has to be made in former scientific research (Golafshani, 2003). Semi-structured qualitative interviews were chosen as a method for this study as it was judged to be the most suitable way to gain information about Avani's textile chain. Value chain analysis was chosen as another method, as it graphically shows the chain, created from the information given in the interviews. To compare the study of this thesis and its' reasoning with former research increases the validity. The possibility for the interviewees to see the transcriptions and the final thesis also increase the validity.

These terms are used in this research to ensure that the data collected are reliable and valid but also to facilitate trouble-free editing and analysis of data, while keeping the burden on the interviewee to a minimum.

### 5.5.1 Research ethics

Social science has four main ethical principles for protection of individual participants in empirical researches called principle of *information*, *concurrency*, *confidentiality* and *utility*. Each and every principle includes specifications that could be divided into several rules, advises and recommendations (Vetenskapsrådet, 2002).

The participants need to be well *informed* and have a consciousness of how they are participating in the research for the data to be relevant (Allmark et. al., 2009; Lichtman, 2010). That is why the interviews started with giving the correspondents information about the purpose of the study, project and time frame. The participants then got the opportunity to read the transcription from the interview and the final product of the research to avoid any misunderstandings but also to remain the highest of *concurrency* (Lichtman, 2010; Vetenskapsrådet, 2002). Meaning of *confidentiality* include that the participants remain the right to choose to be anonymous in the research (Allmark et. al., 2009; Lichtman, 2010; Graham et. al., 2007). The participants got the choice to be anonymous or be dis-identified in the research. If they chose to be anonymous, the participants are coded (as interview 1, 2, 3 etc.) when a quotation was needed from the interview to decrease the risk of getting personal information or experience exploit (Allmark et. al., 2009; Lichtman, 2010). The *utility* were explained when the opponents explained that the interview recordings was only for them to listen.

### *5.5.2 Translation ethics*

Three translators were used on account of language barrier in five interviews of seven total. Translators encounter a range of ethical difficulties during interpreting therefore maintenance of ethical guidelines are crucial to good practice in translating values, perceptions and opinions. The similarities in general translation principles are for example to create reliable information between two parts, watch for misuse of information, to remain professional by refraining unacceptable self-promotion but most importantly to respect their clients' right to privacy and confidentiality (NAATI, 2013).

This can be everything from reinterpreting grammatical structure to shift from passive to active voice (Yazdani & Hoseinabadi, 2013). A qualified translator can be defined to two specific points, someone who has (1) very good knowledge of the foreign language in both text and speech but also (2) recognition of the subject in matter that are discussed. The translation process is important to understand and have in mind because it influences the readers' perception of the result and the result itself.

The translation processes in this thesis are according to Yazdani & Hoseinabadi (2013) describe the four levels of translation as language, referential, cohesive and naturalness. The language level of translation is followed in this study by only choosing translators with Hindi as their mother tongue. The referential level is concerned in the way that the translator visualises and uses the same examples as the original source. Before the interview was held, the researchers specifically told the translator to use the exact same words as the interviewee. The cohesive level was only encompassed when the translator retold about positive or negative tones of feeling for example when the interviewees' described if they are safe or not. The fourth and last level concerns the appropriate naturalness of vocabulary that the translator kept between the interviewees and the researchers so that both parts understood the question or the answer (Yazdani & Hoseinabadi, 2013).

The language level was never an issue since all the translators had Hindi as their mother tongue, and English as their second language. To mention is that all three translations used in this thesis were students from universities in India therefore the English was at academic level. The other translation ethics levels were hard to follow since a professional translator did not do the translations. The ethical difficulties during the interview were that the translator did not remain objective but added values to the interpreting accidentally, which affects the referential and naturalness level. The cohesive level got exposed when the translator decided to reformulate the interview guide question during the interview. This might have changed the interviewees' answers distinctly. The translators had to be reminded continuously to stay within the translator ethics.

### *5.5.3 Ethical implications*

It is not as simply to just go abroad to collect data and then go back to your home country. As privileged foreigners, but also as scientists, first arriving to a country as India was difficult since a realisation of how less valued women are in the culture. No matter if you are a foreigner or scientist, your value is still not higher than a man. This created some implications

when conducting research since work hours, work place etc. was determined by gender, not importance or quality. It also created hinder when needed help, since women are never first in line because of less value. The next ethical implication to highlight is the caste-system, where it simply was not allowed to emphasise certain aspects or have different opinions as the lord of the campus.

## 6 Delimitations

This study concentrated on the specific area of formalising a value chain of Avani's textile production. The thesis did not concern a global perspective on Avani's textile production since a global value chain analysis are more complex than the value chain itself and can be considered for future research. One motivation can also be that the enterprise wished to improve their work in India rather than abroad. The limitations for this research are divided into certain boundaries as theoretical, methodological and material.

### 6.1 Theoretical boundaries

The theoretical boundaries are explained as economic, environmental and social. The economic boundaries are that no specific mathematical calculation speaking of the economy in the triple bottom line.

The economic aspect is only used to understand the employees' economic situation in a sustainable perspective. Avani do not have any collected data about the cost of underemployment or the employment distribution by sector, making it hard to conduct a research on the matters. The percentage of firms in each sector cannot be done since EarthCraft's enterprise do not consist of several independent sectors but function as one unit with one economy. The same reason is why research is not made on the revenue by sector contributing to gross state product, because there is only one sector so there is nothing to compare with.

Environmental boundaries for the thesis are for example the geographical aspect since the research only stay within borders of the Kumaon region and the environmental impact in the region. Avani do not have any information about the chemical concentrations of substances and excessive nutrients in their textile production. They also do not have any fuel consumption calculations and facts about solid waste from the entire organisation, which complicates the research on the items. The research is retraced as to see the environmental awareness at the organisation instead of measuring it biochemically as analysing method. The social limitations are due to that there is no data collected or that the data that Avani has constructed cannot be accessed to since the data are collected in Hindi and not in English.

These limitations are the unemployment rate, the median household income and the percentage of how many employees that have post-secondary degree or certificate. Other social boundaries for the thesis are ethical cultural aspects since the thesis do not in detail describe any religious or traditional activities that happen in the Kumaon region. The ethical values that are in the discussion are only the ones that the interviewees chose themselves to bring up as an important factor to the social sustainability. The same is considering the health-adjusted life expectancy and the relative poverty aspect. To be able to use 4P in research the 3P need to be stated clearly. As this thesis only have a focus on defining the 3Ps of Avani's textile production, a future research project would be defining the fourth P as well. That is the reason why a defined 4P is not included in this thesis.

## **6.2 Methodological boundaries**

Methodological boundaries concern the interviews, parts of the 3BL and value chain analysis. The limitation with the interviews are that only a few employees at Avani's enterprise was chosen as representatives for their stage and that some of the interviews was held with a translator. Translation ethics and principles were presented to the translator but yet much information got lost in translation. Both 3BL and the value chain analysis function as methodological frameworks. Moreover, the sample size of the study limits the ability to generalise our findings since the research can never be executed outside the boundaries of the methodology.

## 7 Analysis

This chapter presents the result from the qualitative interviews combined with the value chain analysis to create graphical pictures of the textile production. Then the data get measured according to 3BL and presented into three different sections; economic, environmental and social measures.

### 7.1 Value chain analysis

Former scientific research in common value chains showed that the most accurate titles have a beginning, such as farming stage, and an end, such as storage stage, in a value chain (see figure 3). The snowball sampling of interviews participants in the case study led to that one key individual was found for each stage in the textile chain (Rieple & Singh, 2010): farming stage, yarn manufacturing stage, dyeing stage, fabric manufacturing stage, finishing stage and the storage stage (see figure 3).

This is the sketch of Avani’s textile chain and all identified key processes, which are now called stages, and activities, called steps, for the organization. The bold lined boxes are the key processes in Avani’s textile production and lined boxes are steps within the stages explained in table below (see table 1). The crosshatched boxes are important to keep in mind while building a value chain, but are not highlighted in this research. The white arrows symbolize the transitions of a stage to another stage, as when the dyeing stage goes over to the fabric stage. The black arrows are simply a re-loop in the chain, also explained in the table below (see table 1).

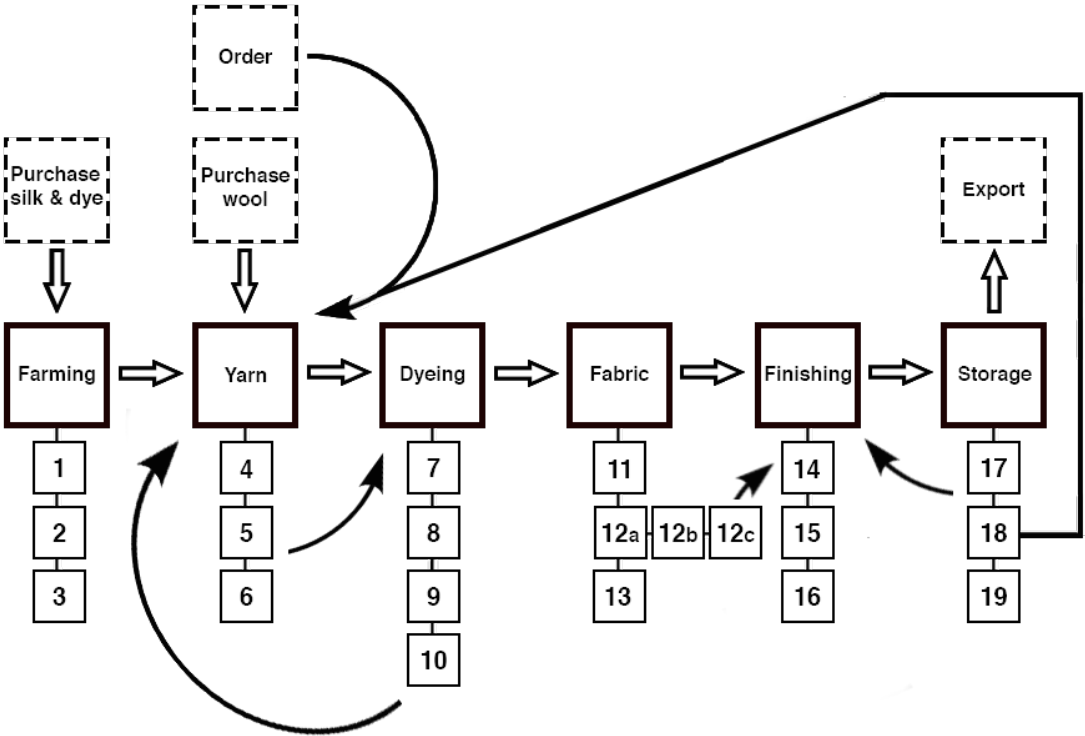


Figure 2 shows the value chain of Avani’s textile production.



To explain the stages even more, several steps in the stages were identified as well. The bold texts in the table are the stages in Avani’s textile production and the black texts are explaining the steps in the stages. The grey texts explain the steps in the crosshatched boxes and every time there is a re-loop in the chain a referring to the figure 3 is visible (see table 1).

Table 1 explains the different stages explicit as steps in the value chain of Avani’s textile production.

<b>The Farming stage</b>	<b>The Yarn manufacturing stage</b>	<b>The Dyeing stage</b>	<b>The Fabric manufacturing stage</b>	<b>The Finishing stage</b>	<b>The Storage stage</b>
1. Cultivation of the material needed for dyeing and fulfilling the daily quota.	4. The yarns are delivered in 200 kg boxes. All raw materials from field centres are stocked in the inventory.	7. The yarn get soaked in water for 24 hours, then the yarn have to boil in water for 30 minutes, get wringed and put out to cool.	11. Rajnish Pant manages the drafting where the colour and pattern gets decided.	14. First thing done is to wash and calender the fabrics before finishing the garments, which includes stitching and sewing of the fabric.	17. Quality control of the fabrics, if the finished product is not good enough it will be sent back into the production chain (see figure 3).
2. Farming of the cultivated dyeing material with neem oil to prevent damage.	5. Washing and hank preparation of the yarn is done before calculation how the yarn will be dyed, knitted, weaved or sewed. After the yarn is dyed it comes back to the yarn manufacturing section (see figure 3).	8. The yarn lies in a colour fixative, or mordant before adding the dyeing material in able to get the colour to get into the fibres.	12a. The yarn gets reeled making them into bobbins. 12b. Warping is made to create the proper width of the fabric. 12c. Weaving finishing and if there is something missing the process starts over (see figure 3).	15. The employees stitch different things depending on their skill. Another thing that is done in this step is sewing the Avani patch on the products.	18. When the products are being judged as well made, every product is labelled. If a piece is very popular, they continuously plan so that the piece will be produced again, as this is good for Avani’s business (see figure 3).
3. Handling of the silk and silk production.	6. The stock is maintained on a computer and the yarn is then sent away to the proper production stage.	9. For one kilogram of yarn, 20 litre of water is used. First temperature of the water is 60°C then increased depending on how bright the colour should be.	13. All the yarns that cannot be reeled is used to make knitting balls and sent to the knitting department where knitting garments are made.	16. When the garments are judged to be finished, they are sent to the finished goods department.	19. The step after the finished goods department is to pack, sell and export the products to different retailers, companies or private persons in India as well as the rest of the world.
The rest of the dyeing material get purchased from outside when the cultivation does not fulfil the daily quota.	All the incoming orders arrives to this stage and it gets decided how much fabric that needs to be produced. All the wool purchased from outside the chain is also handled by this stage.	10. The dyed yarn is laid in the shade to dry because drying them in direct sunlight makes the colour to flake off causing unwished colour differentiation. (see figure 3).			Then the products get exported to websites, retailers, private companies or private persons and goes outside of the production chain.

## 7.2 What does it mean to say economic sustainability?

The economic scale relates to the departments sense of salary, individual wealth but also to connect the terms money flow, business climate factors, personal income, establishment churn, establishment size, job growth and business diversity in addition to connect it to the economical bottom line.

### 7.2.1 The main elements touching the economic variables

Pant (Interview 2) was the representative for the entire textile production chain. He explained that Avani’s enterprise is divided into two main business categories. First there is the non-profit organisation called Avani and then the Kumaon EarthCraft Self Reliant Cooperate known as EarthCraft. Avani sells their products in three ways: selling at exhibitions, selling through retailers of different sizes and through order to several countries in the world (Pant, Interview 2). They mainly promote their products via the Avani website but a future campaign for the textile products is to establish an e-marketing portal that can ship

worldwide. Avani hopes to increase the sales to 1.5 lakh<sup>1</sup> and to employ 1200 people, instead of the current 700, in the upcoming five years. As it is today, men and women have the same salary for same work. The future marketing plan for Avani includes two new marketing responsible persons covering both the north and south India, and also one marketing assistant so their products can gain more publicity (Pant, Interview 2). According to Interview 6 Avani had to stop with the cultivation of silk around 2010. The people in the villages that Avani had trained were not happy with the low income, which the silk cultivation generated.

The farming stage believes that Avani has improved the wealth and richness throughout the region at a large scale. Money was not much in the beginning but slightly increased as the interviewee increased the knowledge in the farming field. Interview 6 talked about that it is difficult to imagine how the person would find job and earn a personal income without Avani, probably the individual would have travelled to other parts of India and start to work in a factory (Interview 3: Interview 4: Interview 5: Interview 6).

The yarn manufacturing stage is represented by Interview 4 and shared a thought that the employee gets around 5000 rupees per month (79 USD), which is a high salary at the organisation. Interview 4 described that the person earned 1000 rupees a month (16 USD) before but this was not possible for the person since the kids needed education, food, clothes and so on. The interviewee explained that the person talked to the management of the organisation and they together arranged a position at the organisation where the individual could earn more money (Interview 4). “Without Avani we are nothing and maybe we die”. The person believes that without Avani they are nothing, maybe they would even die (Interview 4) since they would not afford to buy food without a salary.

Even though specific questions were asked to the Interview 1 of the dyeing stage, all answers seemed to lean more to the social scale when asking the questions. One answer that could be connected to the economic aspect is how near the person has to the job and how this saves the individual a lot of commute time. Interview 1 was also clear to explain that even if the person earned a “little many money”, things such as the environment, people and family were more important (Interview 1).

Interview 7 from the fabric manufacturing stage wanted to highlight that Avani have improved wealth in the region since they have given employment to a lot of people. Regularly, village people do not allow women to go outside of their homes and work (Interview 7).

The finishing fabric stage representative Interview 5 shared that the salary has never increased even though the person has been working many years at the organisation, and the interviewee

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<sup>1</sup> Lakh is a unit in the Indian numbering system equal to one hundred thousand (Perthmint, 2015).

never complains about this because of the terror that the management will fire the individual (Interview 5).

Interview 3 from the storage stage shared that there are knitting groups with women that collect and sell dye material to earn extra money on the side. Avani provides the interviewees' family a house at the campus where they can live and the house rent is taken from their salary (Interview 3).

### *7.2.2 Economic bottom line in the value chain*

Avani's division in the establishment churn made it possible for the organisation to develop a solid foundation for their economy. Business climate factors that widen Avani's establishment size can be described as the exhibitions in different cities like Delhi, Bombay, Calcutta or Bangalore but also that the organisation sell through retailers making them available for the world. Something that could be improved for a more economic sustainability is to assure customers a functioning e-market portal on Avani's website, which is already included in future marketing plans. As for now, Avani does not have any full-time employee responsible for the marketing strategy, which could make a significant difference for the establishment size. They recently started a marketing centre in Delhi with one employee, which can be the first step of an economic development of sustainability (Hall & Slaper, 2011).

The establishment churn increased the job growth since a foundation work especially with finding more people and giving the employees salary for their work boosting the flow of money in the region. The goal to reach 1200 employees by 2020 is ambitious but not impossible due to the underemployment in the surrounding areas. The personal income is at an acceptable level according to the management but the employees seem to have the mentality that they want more money covering their needs. All the women and the men earn the same personal income for the same work, which is considered an economic sustainability measured with the 3BL. The Avani enterprise saves the workers a lot of commute time since the workplace is close to their home otherwise they might have to move away from their families to bigger cities and job opportunities (Hall & Slaper, 2011).

Though, employees believe that money is not the only richness that Avani have provided them such as knowledge (Interview 6), education (Interview 1), accommodations (Interview 3) etc. and several employees agreed to that it would be hard to pay for expenditures with a stable hiring. There are a variety of situations at the campus of how the employees feel about their salary and what they choose to do about the problem. As so far in the interviews, there was not a problem if the employee asked for a better position or a raise to pay for children expenses (Interview 4), but if there are no complaints there is no progress either (Interview 5). There is wide business diversity in the way that Avani provide the employees with extra jobs if wised for a higher salary (Hall & Slaper, 2011).

### 7.3 What does it mean to say environmental sustainability?

The environmental variables are the individual's awareness about the environmental impact, natural resource flow, change in land use/cover, energy consumption, water quality, waste management and working environment.

#### 7.3.1 *The main elements touching the environmental variables*

As Avani's enterprise grew bigger and bigger, the focus of the organisation turned to more environmentally initiatives such as conserving the nature. Pant (Interview 2) means that before all the habitants in the region cut down the trees for fire, but when Avani wanted to use the nuts for dyeing then the trees were planted instead of cut down. He also described that Avani are using two kinds of wool. One is the local wool harsil from the Gharwal region in Uttarakhand, the region next to Kumaon where Avani is located. The other kind of wool is called merino and has origin from Australia. Avani do not buy it directly from Australia but buy it from suppliers in India, which import it, which Pant (Interview 2) was crucial to highlight.

There were no clear guidelines for how to manage electricity, water or waste when the organisation started but this blossomed as the organisation grew bigger. There are fixed guidelines in water management during washing the textiles but not followed due to the uncertain water use needed in washing. The washing recommendations for the clothes are hand washing and dry cleaning because of the natural dyeing (Pant, Interview 2). When speaking to Pant (Interview 2) about the chemicals used in dry cleaning, they did not seem to know what it means to dry clean. Avani says that they only use eco-friendly fuels, however diesel or petrol is used in the transportation. They have a controlling system for the energy use on campus and teach each team how to be energy sufficient and teach every team about how to not waste electricity. The fabric waste from wool and silk are reused to create other textile products such as baby blankets, dolls and cushions. The organisation have done a lot of research about natural dyes and the organisation states that research is needed in the textile production and in the natural dyeing field, but the trouble lies in economic and human resources (Pant, Interview 2).

Interview 6 was aware of that Avani are working with environmental projects and that before Avani came to the region, people would initially cultivate and then cut the trees for the wood, but now everyone is more caring for the trees when they started to make a business out of it. According to Interview 6 of the farming stage Avani do not use any kind of chemicals or pesticides when it comes to farming since all the material are for the natural dyeing process. Instead, they use neem oil extracted from the neem plant that they sprinkle over the plants (Interview 6).

A lot of the interviewees did not know of any environmental project related to Avani (Interview 3: Interview 4: Interview 5: Interview 7) but still there was some awareness of how the plastics are being taking cared of at the organisation (Interview 5). Inside Avani they have access to clean water facilities, but outside the organisation people might have a water access

issue due to the water scarcity in the region, which means that a lot of people have to go far to collect water (Interview 4).

Interview 1 from the dyeing stage explained that the environment is one of Avani's main priorities, as when the environment does not feel good so do not the people. The interviewee mentioned that the boiler used for the natural dyeing at first was driven on wood from the area. It was judged to not be good for the surrounding environment, so they started to drive the boiler with diesel oil not harmful for the environment (Interview 1).

The interviewee does not find the working place to be safe because of the gas in the dyeing room. There is however protection clothes such as defend dresses, masks, gloves and shoes. Problems can still occur for example when you open the gas door and there can be an explosion (Interview 1).

### *7.3.2 Environmental bottom line in the value chain*

The mentality of inhabitants in the Kumaon region has changed concerning the deforestation of land cover meaning that people do no longer cut down trees for heating and can be measured as an environmental sustainability. Though, Avani replaced the fuel with diesel ever since they stopped using cut wood as heating system, which is not considered as a sustainable solution. The same thing is happening when the local cultivation of dye materials are farmed with neem oil in local areas, yet the dye materials get transported to the dye department with cars running on fossil fuels (Hall & Slaper, 2011).

Represent measurements of natural resources viability can be described with the Australian wool that Avani are using. It is difficult to measure the sustainability in the textile production chain since Avani do not import it but the environmental impact from the shipping is too significant to ignore. There can be no critique considering how both types of wool are farmed since this information has not been accessible for this research, which is alarming because the products are still marked as eco-friendly even though no background of the production can be traced (Hall & Slaper, 2011).

The guidelines and policy documents considering the energy consumption seem only to include how to manage the consumption but no focus on what that is really consumed. One interviewee said that diesel is not harmful for the environment, which confirmed the lack of environmental awareness among employees. Something to add is that vehicles on diesel or petrol do all the textile transports. The individual environmental awareness considered the waste management goes as far as the fences that surround the Avani campus, on the contrary Avani's textile waste is carefully taking care of and recycled (Hall & Slaper, 2011).

There are divided opinions concerning how the working environment is good or is in need of improvement. Most of the employees are happy since they have access to clean water. An employee felt that the working environment is not safe since the working room is filled with harmful gas and even though complains are made, no intervention has been made so far to improve the working area (Hall & Slaper, 2011).

None of the employees label themselves as workers for an eco-friendly textile brand, which should be incorporated in the information they receive when they start working for Avani. It seems logic to know such facts to understand how you can move forward with a product towards sustainability (Hall & Slaper, 2011).

#### **7.4 What does it mean to say social sustainability?**

The social variables of the 3BL refer to the social dimensions as health, training, education, equity, access to social resources, well-being, life quality, social capital, female labour force participation rate, relative poverty, average commute time, crimes per capita and the general life expectancy. The first section in the paragraph is from the representative for the entire textile production chain and then each section represent the key process in the same order as the value chain; farming stage, yarn manufacturing stage, dyeing stage, fabric manufacturing stage, fabric finishing stage and the storage stage (see figure 3).

##### **7.4.1 The main elements touching the social variables**

Pant (Interview 2) talked about that Avani has about 700 employees working with textiles, both full-time and part-time. There are seven training centres spread around the areas of Avani's main centre. Most of the workers have an education until the 8th standard, but there are also workers that do not have any regular education at all. Avani provides training for all their employees when it comes to the required skills for working with textiles such as spinning, weaving or sewing (Pant, Interview 2).

One of Avani's focuses has been to empower the women in the region that live alone, with husbands who work in the big cities. The employees are having three different types of insurance while they work at Avani: life insurance, health insurance and accidental insurance. Pant (Interview 2) described that people who live far away from the campus are welcome to stay at the campus in working weeks and the employees who lives in five kilometres radar commute to the campus daily. If Avani would not exist in the area, women would work with farming and the men would try to find jobs in the cities instead of working with crafts (Pant, Interview 2). It would mean that the people living in the region would mostly be women and children.

One interesting cultural aspect highlighted was that girls who work within the organisation get married five to seven years after the girls without any work place. Before it was common that the girls were married already between 18 and 20 (Pant, Interview 2; Interview 3). Interview 6 said that the employees are really happy about the possibility to live close to the family in the area the person grew up in, no matter what the salary would be in the end. "It matters more than money" (Interview 6).

For Interview 4, the health can also be a relevant scale when the yarn manufacturing supervisor's breast operation might hinder from doing the work properly. Though the employees feels like Avani listens to their employees since the department got one more worker after the breast operation to help carrying the yarn deliveries, more human resources

are still needed, preferable a male (Interview 4). When asked about wealth, the answer was only concerning social scales such as providing lots of facilities and luxuries to the Avani employees and volunteers making their life “richer”. To have access to clean water, a school for the children, clean food and clean energy is a wealth itself (Interview 4).

Interview 1 summarised that even though the interviewee had no experience in natural dyeing, that person got the responsibility for the dyeing unit and then learned everything about the dyeing process. The interviewee has experienced an improvement in possessed language skills since the person only has spoken Hindi before and not English (Interview 1). The interviewee from the dyeing stage believes that there is no problem with complaining or discussing self and health problems at Avani since the organisation “function as family” (Interview 1).

When asked in Interview 7 if the employee of the fabric manufacturing felt like if the person can affect their working conditions, the answers were that the interviewee wish to not change anything. Still, the translator wanted to highlight that she felt like the interviewee meant that the employees could not make a change even if they wanted to because of given positions (Interview 7).

Interview 5 from the finishing stage lives about 40 minutes away from Tripuradevi centre and earns 3500 rupees per month but does not feel that that is enough for the family. Whatever situation the person is facing, the interviewee is handling it and never complains. The interviewee is afraid that Avani will decrease the salary completely if complains are made and that fear makes the person never complaining at all (Interview 5). Sometimes the interviewee wish to quit the job and get away from Avani and start an own business since the wage is too low. Interview 5 is described as an innocent person and has never been able to feel that the person is of high rank to scold anyone (Interview 5).

Interview 3 foreclosed that Avani meet every morning to talk about any problems that occur while working, the one responsible for listening to complaints are Rajnish Pant. There was no potential opportunity for the interviewee to go to the market place or move outside the house before Avani came to the region and empowered the people. The interviewee meant that the women were too scared to walk outside and mostly stayed inside the house where they knitted and cultivated indigo plantations (Interview 3).

The interviewee wanted to emphasise that Avani had provided knowledge outside the boundaries of the employee’s position at the finished goods department such as handling a computer, camera, projector, laptop etc. but also to learn how to behave as a human being for example how many kids a family should have. Interview 3 talked about that women usually give birth between five to six kids in villages where the women do not work, but in villages where they do work the standard is more likely to be around 2 kids (Interview 3).

#### *7.4.2 Social bottom line in the value chain*

Equity gets promoted in the community, as there is no standard of education in the campus so the doors are open for everyone and the organisation welcomes every worker. Possessed knowledge required for working with certain departments are taught and given by the organisation to the employees. Some of the employees got a level of computer skill since started working with Avani, which embrace the access to social resources such as online education, accountant programs and so on. There has also been improvement in social skills such as multilingual, cooking, etiquette and domestication like how many kids that a family should have (Hall & Slaper, 2011).

The female labour force participation, which Avani have through the empowerment of the lonely women in the community therefore the women's employment are so high. Violent crimes per capita is rated as low in the region but still some of the women felt unsafe to walk the streets due to the high alcoholism (Hall & Slaper, 2011).

Health- adjusted life expectancy can be measured as a stable dimension in the social sustainability. This because all the employees have life insurance covering most of the health related issues at work. Avani is not a workplace but a family were the idea is that everyone feels like they can talk about everything, which implies a strong social capital. This can though be discussed in many angles since there is employees that do not feel empowered enough to talk about how they feel. Life expectancy can also be related to the age of marriage, that girls get married later increases their chance to get a proper education and work before finding a husband. Some of the employees believe that Avani takes care of their well-being since they get special help when ill or hurt but sometimes it can take long time before that help arrives, which is something that can be considered in the social measurements (Hall & Slaper, 2011).

Since Avani provides homes for most of their employees the average commute time can be calculated to a minimum and it enriches the region with clean food, markets and traditional crafts. Avani's campus decreases the relative poverty since both partners of a household can have normal day jobs and leave their homes. The fact that they can come home every day to their family makes them happy and gives them exceptional quality of life, both partners can for example be there for the children when they grow up (Hall & Slaper, 2011).



## 8 Concluding discussion

To what extent can a textile production's processes contribute to sustainable development? Sustainable developments that the textile industries have succeeded so far are included in all three dimensions of the 3BL theory. The social bottom line in Avani's textile production is the most sustainable dimension and the economical is not far behind (Hall & Slaper, 2011) and this can be confirmed by former scientific research that has similar conclusion for bigger textile industries. It is often that textile production focuses on removing the poor social conditions for the workers first, then increasing the profit for the production and then at last improving the surrounding environments (Caniato, 2012). The environmental dimension is currently and frequently less prioritised than the other dimensions, which is probably the reason why environmental devastation keeps happening since focus lies elsewhere. If the environmental dimension function as a fundamental mind-set for an organisation, the perception on sustainable solutions in an organisation or company might be different because the prioritisation is different. One may look at consuming natural colours and natural fibres for the environmental sake rather than consuming pollute colours since they are cheaper and might give more profit.

### 8.1 Sustainable developments

Though it is found that smaller textile producers can succeed in sustainability because of local investments, such as reduced costs in long distance transports, composting, own cultivation of dye material in a way that minimizing the energy use of the organisation. This can be found in other similar studies where an economic and social justice of livelihood support was created to the farmers with higher salaries and the opportunity to employ more people in the region (Norris, 2013) giving smaller textile producers the chance to grow.

Just like Avani have achieved reconstruction of the organisation, because of the division in the establishment churn, such as maintaining niches like gender empowerment and focus on green energy solutions, other organisations can do the same. Dolan and Tewari (2001) means that a division in the establishment churn like that can make it possible for an organisation to develop a solid foundation for their competitive niche, which in the long run may compete against other organisations with less competitive niches (Dolan & Tewari, 2001).

UNECE (2012) discuss that gender empowerment is the key to sustain development since when highlighting empowerment people tend to get the chance to develop themselves through studies, exhibitions and encounters, as the results in the case study confirms. Other studies can be connected to that female force participation can be integrated to meet labour standards and to even the distribution by sex, which Avani accomplish in the textile production chain by engaging an equal distribution of men and women in higher working positions (Dolan & Tewari, 2001). Heterogenic formed workplaces with diversity of gender, age and background tend to give long-term results since more aspects might be highlighted than if a workplace where only of men or only of women. A heterogenic workplace is therefore to recommend for future organisations (Hope & Moehler, 2014).

Some other aspects that former scientific research agrees with, that the result indicates as well, is that a sustainable textile industry conquers obstacles to meet basic human standards when the employees gain skills as multilingual, cooking, etiquette and domestication (Kothari, 2014) improving the quality of life in the region (Hall & Slaper, 2011; UNECE, 2012). Sustainable textile productions then show willingness to support environmental initiatives by fighting environmental devastation and minimizing the environmental pressure on India's bio-capacity of resources (Avani, 2012; Kothari, 2014).

## 8.2 Unsustainable developments

Unsustainable developments that sustainable textile industries struggles with so far are mainly in the environmental dimension resulting in that the organisations products and services is not as eco-friendly as they seem to be. Astudillo et. al. (2014) claims that it would be a good idea to increase the environmental awareness and advertisement since their consumers desire sustainable products. Avani's natural dyeing process and the silk garment are the only things in the textile chain that earned a certificate, not the entire production chain, which can be criticised covering the global industry. Eco-friendly is a subjective term that can be used in different ways however becoming eco-friendly is not the same thing. Choudhury (2013) mean that when using such terms the company need to assure consumers that goods, services and practices whereas non-eco-friendly substances exist for example the diesel Avani uses as fuel in the natural dyeing. If the crop was farmed organically but then processed in a conventional polluting system the meaning of organic crop gets terminated (Rieple & Singh, 2010), which sadly happens in many cases.

Govindan et. al. (2012) writes that environmental and social pressures steer the chain management in different directions meaning that an organisation is pressured to dump their waste in the local forest causing problem for humans, animals and the nature. The pressure can get even more intense if a textile production, like Avani, wants to hire more people hence more garbage in the woods. Long-term success in waste management means that an organisation would need to improve how they handle litter from the textile production chain and employees (Ageon et. al., 2011; Hassini et. al., 2012; Govindan et. al., 2012). Often the sustainability analysis stay within the production chain, but it is important to discover how the surrounding environments get affected by the business to understand the total ecological footprint from the organisation.

It is a fact that research is needed in the sustainable textile industries (Caniato et. al., 2012; Norris, 2013; Reuter et. al., 2012) therefore it is even more relevant that textile organisations, like Avani, construct studies related to their enterprise. The research that Avani constructs today should be done in variation of fields not only the dyeing process. A further recommendation is that all organisations working with sustainable textiles should research in more fields than just one, for example on natural fibres, waste management and overall pollution to always develop their business to the environmental dimension. Every sustainable textile industry makes an ideal for themselves and the fashion industry contributing with relevant research to always be on the front edge of sustainability. If this does not happen, if

the sustainable textile industry is not the ones to drive the sustainable textile research then who will?

To increase the sustainability in all three dimensions it is important for a textile organisation to make sure that the employees feel like they can complain and improve their work place. An economic unsustainability that still affects the textile industry is that the employees are dissatisfied with their current salary (Hall & Slaper, 2011). When employees are not happy with their economy, this effects how pleased they are with their social life, which itself could be an obstacle for environmental consciousness. This is something that organisations like Avani should consider since most of the organisations are looking forward to hire more people in the coming years to expand the industry. If the textile organisations are supposed to be long-term sustainable, they need to be sustainable from the beginning. It can be hard for an organisation as Avani to handle 1200 employees if they struggle with 700.

It can also be a significant difference to change the use of diesel and petrol in a textile production chain to renewable energy sources or vegetable oils since these have less impact on the environment. Prasad & Katiyar (2010) means that the flow of information in an organisation needs to be consistent and cohesive so that the environmental consciousness can be more sustainable. One example is that some of the employees at Avani believed that petrol based fuels counts as environmental friendly, and some employees knew the fact that it is not (Prasad & Katiyar, 2010).

It can also be a significant difference to change the use of diesel and petrol in a textile production chain to renewable energy sources or vegetable oils since these have less impact on the environment. Prasad & Katiyar (2010) means that the flow of information in an organisation needs to be consistent and cohesive so that the environmental consciousness can be more sustainable. One example is that some of the employees at Avani believed that petrol based fuels counts as environmental friendly, and some employees knew the fact that it is not (Prasad & Katiyar, 2010).

To sum up the concluding discussion Hall and Slaper (2011) might say that the social bottom line in Avani's textile production is the most sustainable dimension and the economical is not far behind. The environmental dimension is the weakest measured according to Hall and Slaper (2011) in Avani's textile production chain. Based on this study, previous research and made discussion, these assumptions can create generalised recommendations for the global textile industry. A sustainable textile production chain should:

- ◆ Inform the employees about the textile productions environmental work and how the organisation is environmentally aware.
- ◆ Create a standard for the working environment in the textile production chain and inform the employees about safety at work.
- ◆ Establish guidelines and policy documents considering future environmental planning and energy consumption that can include that the organisation strives to get rid off fossil fuels.

- ◆ Use fabric materials produced in the country where the organisation is located and keep detailed descriptions of how the fabric materials are used in the production chain from farm to fabric, in order to judge if the materials are eco-friendly or not. .
- ◆ Give the employees a salary that covers all their basic needs.
- ◆ Keep information about all employees such as health records, salary, background etc. in order to determine for example how long time they have been working in the organisation or how often they are sick.
- ◆ Have responsible persons handling social complains which would increase the willingness to improve. Preferable someone that is not managing the entire chain or one of the founders.

### **8.3 Further scientific research**

Future research for this particular case could be for example to add the fourth P, progress to the 3BL analysis, then analysing the progress of above mentioned recommendations. Research in this particular area has not yet been carried out thus far concerning environmental circumstances and need to be improved. Still, further aspects should be explored and tested based on larger sample collection such as comparing sustainability in different textile production chains from different geographic regions in order to determine the ultimate ideal solution towards sustainability. A larger study could have assessed the explanatory power of more distant variables than just the economic, environmental and social aspect. In particular, the perception of ethics at varying within organisational scales may differ significantly. Most of all, further research need to be done with long-term measurement of well-being with dimensions as environmental, economic and social in able to refine and define the capacity to endure or sustainability.

## **9 Conclusions**

The research questions are answered in chronologic order, in able to string together this thesis.

### **9.1 What are the key processes in the NGO Avani's textile chain?**

The identified stages of Avani's textile chain are the farming stage, the yarn manufacturing stage, the dyeing stage, the fabric manufacturing stage, the fabric finishing stage and the storage stage. Other significant stages to keep in mind are that the organisation purchase materials into the chain, then handling the orders and then exporting the product out from the chain.

### **9.2 To what extent can these processes contribute to sustainable development?**

The extent of this research is limited to the characteristics of Avani's establishment, location and production chain but also to previous research. The processes found can contribute to sustainable development when choosing pesticides or fertilizers, fabric materials, dye materials, weaving or knitting manufacture but also when consuming fuel, setting standards for working environments and increasing the consciousness of sustainability. These stages can in turn contribute to the counteraction of environmental devastation.

## 10 References

The reference list of this thesis is divided into the categories: academic journals, interviews, PDF's, printed literature and websites.

### 10.1 Academic journals

Ageron, B. Gunasekaran, A. Spalanzani, A. (2012) 'Sustainable supply management: An empirical study', *Int. J. Production Economics*, vol. 140, April pp. 168- 182.

Astudillo, F.M. Thalwitz, G. Vollrath, F. (2014) 'Life cycle assessment of Indian silk', *Journal of Cleaner Production*, vol. 81, June, pp. 158- 167.

Baskaran, V. Nachiappan, S. Rahman, S. (2012) 'Indian textile suppliers' sustainability evaluation using the grey approach', *Int. J. Production Economics*, vol. 135, July, pp. 647- 658.

Caniato, F. Caridi, M. Crippa, L. Moretto, A. (2012) 'Environmental sustainability in fashion supply chains: An exploratory case based research', *Int. J. Production Economics*, vol. 135, June, pp. 659- 670.

Choudhury, Kumar A.K. (2013) 'Green chemistry and the textile industry', *Textile Progress*, vol. 45, March, pp. 3-143.

Diabat, A. Kannan, D, Mathiyazhagan, K. (2014) 'Analysis of enablers for implementation of sustainable supply chain management – A textile case', *Journal of Cleaner Production*, vol. 83, July, pp. 391- 402.

Dolan, C.S. Tewari, M. (2001) 'From What We Wear to What We Eat: Upgrading in Global Value Chains', *IDS Bulletin*, vol. 32, January, pp. 94- 104.

Dou, Y. Zhu, Q. Sarkis, J. (2014) 'Evaluating green supplier development programs with a grey-analytical network process-based methodology', *European Journal of Operational Research*, vol. 233, March, pp. 420- 431.

Golafshani, N. (2003) 'Understanding Reliability and Validity in Qualitative Research', *The Qualitative Report*, vol. 8, December, pp. 597- 607.

Govindan, K. Khodaverdi, R. Jafarian, A. (2012) 'A fuzzy multi criteria approach for measuring sustainability performance of a supplier based on triple bottom line approach', *Journal of Cleaner Production*, vol. 47, May, pp. 345- 354.

Hall, T.J. Slaper, T.F. (2011) 'The Triple Bottom Line: What Is It and How Does It Work?', *Indiana Business Review*, vol. 86, Spring, pp 4- 8.

- Hassini, E. Surti, C. Searcy, C. (2012) 'A literature review and a case study of sustainable supply chains with focus on metrics', *Int. J. Production Economics*, vol. 140, February, pp. 69- 82.
- Hope, A. J. Moehler, R. (2014) 'Balancing projects with society and the environment: A project, programme and portfolio approach', *Procedia - Social and Behavioral Sciences*, vol. 119, March, pp. 358-367.
- Klassen, R.D. Vereecke, A. (2012) 'Social issues in supply chains: Capabilities link responsibility, risk (opportunity), and performance', *Int. J. Production Economics*, vol. 140, February, pp. 103- 115.
- Kothari, A. (2014) 'India 2100: Towards Radical Ecological Democracy', *Futures*, vol. 56, October, pp. 62- 72.
- Müller, M. Seuring, S. (2008) 'From a literature review to a conceptual framework for sustainable supply chain management', *Journal of Cleaner Production*, vol. 16, June, pp. 1699- 1710.
- Ngai, E.W.T. To, K.M.C. Ching, S.M.V. Chan, L.K. Lee, C.M.M. Choi, Y.S. Chai, P.Y.F. (2012) 'Development of the conceptual model of energy and utility management in textile processing: A soft systems approach' *Int. J. Production Economics*, vol. 135, May, pp. 607- 617.
- Niinimäki, K. Hassi, L. (2011) 'Emerging design strategies in sustainable production and consumption of textiles and clothing', *Journal of Cleaner Production*, vol. 19, May, pp. 1876- 1883.
- Norman, W. MacDonald, C. (2004) 'Getting to the Bottom of "Triple Bottom Line"', *Business Ethics Quarterly*, vol. 14, April, pp. 243- 262.
- Norris, L. (2013) 'Aesthetics and ethics: Upgrading textile production in northern Kerala', *Geoforum*, vol. 50, October, pp. 221- 231.
- Pava, M.L. (2007) 'A Response to "Getting to the Bottom of "Triple Bottom Line"', *Business Ethics Quarterly*, vol. 17, January, pp. 105- 110
- Reuter, C. Goebel, P. Foerstl, K. (2012) 'The impact of stakeholder orientation on sustainability and cost prevalence in supplier selection decisions', *Journal of Purchasing & Supply Management*, vol. 18, September, pp. 270- 281.
- Rieple, A. Singh, R. (2010) 'A value analysis of the organic cotton industry: The case of UK retailers and Indian suppliers', *Ecological Economics*, vol. 69, July, pp. 2292- 2302.

Spicker, P. (2011) 'Generalisation and Phronesis: Rethinking the Methodology of Social Policy', *Journal of Social Policy*, vol. 40, September, pp. 1- 19.

Prasad M. N. V. Katiyar S. C. 'Drill cuttings and fluids of fossil fuel exploration in north-eastern India: environmental concern and mitigation options', *Current Science*, vol. 98, June, pp. 1566- 1570.

Tullberg, J. (2012) 'Triple bottom line – a vaulting ambition?', *Business Ethics: A European Review*, vol. 21, June, pp. 310- 325.

Wood, S. (2011) 'Sustaining crafts and livelihoods: handmade in India', *Craft Plus Design Enquiry*, vol. 3, pp. 89- 100.

Yazdani, A. Hoseinabadi, S. N. (2013) 'Translation Strategies Used by Students of Translation and TEFL: A Study of English- Persian Renderings of Argumentative Texts', *Life Science Journal*, vol. 10, pp. 360- 366.

## 10.2 Interviews

Interview 1, 18<sup>th</sup> of March 2015.

Interview 2, 21<sup>st</sup> of March 2015.

Interview 3, 23<sup>rd</sup> of March 2015.

Interview 4, 24<sup>th</sup> of March 2015.

Interview 5, 27<sup>th</sup> of March 2015.

Interview 6, 30<sup>th</sup> of March 2015.

Interview 7, 30<sup>th</sup> of March 2015.

## 10.3 PDF

Allmark, P.J. Boote, J. Chambers, E. Clarke, A. McDoneell, A. Thompson, A. Tod, A. (2009). *Ethical issues in the use of in-depth interviews: literature review and discussion* in, Research ethics review.  
PDF: [http://shura.shu.ac.uk/1372/1/Literature\\_review\\_RER\\_.pdf](http://shura.shu.ac.uk/1372/1/Literature_review_RER_.pdf)

Avani. (2010). *AVANI - Annual Report 2009- 2010* in, P O Tripuradevi, via Berinag, District Pithoragarh.  
PDF: <http://www.avani-kumaon.org/wp-content/uploads/2009/10/anrep09-10e.pdf>



Avani. (2011). *AVANI - Annual Report 2010- 2011* in, P O Tripuradevi, via Berinag, District Pithoragarh.

PDF: <http://www.avani-kumaon.org/wp-content/uploads/2009/10/anrep10-11e.pdf>

Avani. (2012). *AVANI - Annual Report 2011- 2012* in, P O Tripuradevi, via Berinag, District Pithoragarh.

PDF: <http://www.avani-kumaon.org/wp-content/uploads/Annual-Report-2011-12.pdf>

Copi, I. M. Cohen, C. Flage, D. E. (2007). *Essentials of Logic in*, 2<sup>nd</sup> edition, Upper Saddle River, NJ: Pearson Education.

PDF: <http://catalogue.pearsoned.co.uk/preface/013238034X.pdf>

General Accounting Office. (1991). *Using Structured Interviewing Techniques in*, Program Evaluation and Methodology Division.

PDF: <http://www.gao.gov/special.pubs/pe1015.pdf>

Graham, J. Grewal, I. Lewis, J. (2007). *Ethics in Social Research: the views of research participants' in*, Government Social Research Unit.

PDF: [http://resources.civilservice.gov.uk/wp-content/uploads/2011/09/ethics\\_participants\\_tcm6-5783.pdf](http://resources.civilservice.gov.uk/wp-content/uploads/2011/09/ethics_participants_tcm6-5783.pdf)

Lichtman, M. (2010). *Qualitative Research in Education: A User's Guide* in, SAGE.

PDF: [http://www.uk.sagepub.com/upm-data/27011\\_4.pdf](http://www.uk.sagepub.com/upm-data/27011_4.pdf)

National Accreditation Authority for Translators and Interpreters. (2013). *Ethics of Interpreting and Translating - A Guide to Obtaining NAATI Credentials* in, NAATI.

PDF: [http://www.naati.com.au/PDF/Booklets/Ethics\\_Booklet.pdf](http://www.naati.com.au/PDF/Booklets/Ethics_Booklet.pdf)

United Nations Economic Commission for Europe. (2012). *Promoting gender equality and women's economic empowerment on the road to sustainable development: good practices from the UNECE region in*, New York and Geneva: Sustainable Development platform.

PDF: <https://sustainabledevelopment.un.org/content/documents/797ece3.pdf>

Vetenskapsrådet. (2002). *Forskningsetiska principer inom humanistisk-samhällsvetenskaplig forskning in*, CODEX.

PDF: <http://www.codex.vr.se/texts/HSFR.pdf>

#### **10.4 Printed literature**

Bair, J. (2009) *Frontiers of Commodity Chain Research* in, Stanford University Press. Stanford.

Bruntland. (1987). *World Commission on Environment and Development, Our Common Future* in Oxford University Press, Oxford

Bryman, A. (2012). *Social Research Methods* in, OUP Oxford. Oxford.

Grønmo, S. (2006). *Metoder i samhällsvetenskap* in, Liber. Malmö.

Thurén, T. (2007). *Vetenskapsteori för nybörjare* in, Liber. Stockholm.

### 10.5 Websites

Avani. (2015a). *Our Work* [online] Available at: <http://www.avani-kumaon.org/our-work/> [19 March 2015].

Avani. (2015b) *Our work textiles* [online] Available at: <http://www.avani-kumaon.org/our-work/textiles/> [19 March 2015].

Avani. (2015c) *How You Can Help* [online] Available at: <http://www.avani-kumaon.org/how-you-can-help/> [19 March 2015].

Perthmint. (2015) *Units of measure* [online] Available at: [http://www.perthmint.com.au/education\\_uom.aspx](http://www.perthmint.com.au/education_uom.aspx). [3 May 2015].

## Appendix 1: Interview guide for in-depth interview

### *Introduction*

Hello, our names are Amanda and Emelie. Thank you for participating in this interview. As you might know, we are doing a bachelor thesis about Avani's textile production. We want to understand every step of the chain, from farm to fabric. The interview will take about 2 hours. It's gonna work like this: we have a question, that you will answer. Then we might have follow-up questions before we continue with our next planned question. If you want to read the transliterations or/and thesis we can send it to you.

### *Warm-up questions*

Is it alright to record this interview?

Do you wish to be anonymous or not in this interview?

(If anonymous - can we de-identify you?)

### *Personal information*

Name

Gender

Age

Working status

Accommodation

Family status

Education

When and why did you start working at Avani?

### *Value chain*

As you know, we would like to create a graphic value chain for Avani. In former scientific research, we found descriptive stages of a similar production chain. We would like to go through the stages to confirm that we have not missed anything in the production. These are the stages that we have so far:

The Farming stage - start

The Spinning stage (The Yarn manufacturing stage)

The Dyeing stage

The Fabric manufacturing stage/The Knitting stage

The Fabric finishing stage (The Garment cutting and stitching stage)

The Storage stage - end

### *Economy*

Does AVANI have an economic model?

Is there any sector that is more profitable? Why?

Is there any sector that is more expensive? Why?

How large part of the economy does the textile sector uptake?

How does AVANI sell their textile products?

Does AVANI have any cost of underemployment? Why?

What is AVANI's energy cost in the textile production?

How does AVANI raise public awareness of the economic value of textiles?

Do you receive any economic funds specifically towards AVANI's work with textiles?

### *Environmental*

Does AVANI work with environmental matters? Why?

Why did AVANI start working with textiles?

How has AVANI's textile chain affected the surrounding land?

What kind of guidelines do you have for environmental management in your textile chain?

Water, air, waste...

Does AVANI have any environmental certificates for the textile production? Other certificates?

Does AVANI use any kind of chemicals anywhere in the textile chain? Modarnt

What are your recommendations for washing AVANI's textiles?

How does AVANI work with preserving ecosystems in surrounding areas?

What is AVANI's main energy source in the textile production? Electricity, fossil fuel, renewable energy...

How does AVANI control that energy use?

Do you know of any cultural aspects that affects the view on environmental matters?

Do you have surveillance over the quality of the air and water considering the health aspects for the workers?

### *Social*

How did AVANI get in contact with the involved people in the Kumaon region?

How many workers do AVANI have in your textile chain?

How does the organisational hierarchy of AVANI look like?

How many workers live and work at AVANI? Commute time...

How many of them are educated?

What type of education does the textile workers have?

How has AVANI's textile production provided employment for people in the area?

How does AVANI help new textile workers with training?

How can they make a living through the textile industry?

How is the work with textiles divided between women and men?  
Are there any income differences?  
Have AVANI contributed with female labor participation at the organisation?

Does AVANI have any political pressure?  
How does AVANI maintain the fight against crimes in your area?  
Does AVANI's worker have access to health care, both mental and physical?  
How can the textile workers raise opinion and make a change if they want to?

#### *Other relevant questions*

Does AVANI have any special campaign projects for the textile production?  
Does AVANI have any business partners in the textile industry?

What type of research does AVANI pursue considering textiles?  
Is there any kind of research that AVANI wants to pursue but cannot?

What is the next step for the textile production of AVANI?  
How will AVANI's textile industry hopefully look like in ten years?

#### *Final questions*

Is there anything else you want to add to this interview?  
Is it all right to contact you again if further questions will occur?

Thank you for your time. Your participation is of real value for our thesis.

## Appendix 2: Interview guide for short interviews

### *Introduction*

Hello, our names are Amanda and Emelie. Thank you for participating in this interview. As you might know, we are doing a bachelor thesis about Avani's textile production. We want to understand every step of the chain, from farm to fabric. You are representing the ... stage of the chain. The interview will take about 20 minutes. It's gonna work like this: we have a question, that you will answer. Then we might have follow-up questions before we continue with our next planned question. If we are allowed to record this interview, we are the only ones that will listen to the recordings. The collected data will only be used for the purpose of our research. If you want to read the transcription or/and thesis we can send it to you.

### *Warm-up questions*

Is it alright to record this interview?

Do you wish to be anonymous or not in this interview?

(If anonymous - can we de-identify you?)

### *Personal information*

Name

Gender

Age

Working status

Accommodation

Family status

Education

How did you find AVANI?

How long have you been involved with AVANI?

### *Value chain*

Could you please describe a day at work?

What are the next step after your department?

### *Social*

Do you feel that you can affect your working conditions? Working hours, breaks, salary, position, training...

### *Environmental*

Do you know about AVANI's environmental work?

How safe is your workplace?

What information do you get to improve the safety of your workplace?

### *Economy*

Have AVANI helped improve wealth in the region?

How does working with AVANI help your personal income?

How would you make a living without AVANI?

### *Final questions*

Are you happy with your life here?

Is there anything else you want to add to this interview?

Is it all right to contact you again if further questions will occur?

Thank you for your time. Your participation is of real value for our thesis.

## Appendix 3: Transliteration key

A - Amanda Borneke (Interviewer)

E - Emelie Oldensjö (Interviewer)

(C: example)	=	Concurring speech
(D: example)	=	Disaccording speech
?	=	Questioning tone
[ ]	=	The transliterator observe something that is going on outside the conversation
xx	=	Inaudible
-	=	Disruption
::	=	Speaking in long letters for example a::
(pause)	=	Long pause
(.)	=	Short pause
'	=	Shorten word in speech f.e. I'm
” ”	=	Singing
(exempel?)	=	Unsure transliteration
exempel	=	Accentuation
*exempel*	=	Speaking with joyful voice
(O: example)	=	Overlapping speech
1, 2, 3 etc.	=	New person speaking
,	=	New half sentence
.	=	New sentence
F:	=	Follow-up question
P:	=	Planned question