Sustainable Supply Network Operations:
An Indonesian Textile and Apparel Perspective

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The candidate confirms that the work submitted is her own and that appropriate credit has been given where references been made to the others.

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Dedicated to:

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My mother, Hj. Umika Zainatun;

And my husband, Abdul Muid

Abstract

Indonesian textile and apparel supply networks are customer-driven. The majority of customers reside in developed nations and have sustainability embedded within their organisational goals. In contrast, the suppliers reside in developing nations such as Indonesia. Typically, each customer organization has its own code of conduct for suppliers that includes sustainability requirements. The codes of conduct are used by customers when selecting suppliers and in monitoring the delivery of contracts. As a result, small and medium-sized enterprises in Indonesia need to improve their ability to deliver sustainability goals in customers' codes of conduct while also maintaining the efficiency and effectiveness of their operations. The aim of this research was to improve understanding of sustainable supply network operations in the Indonesian textile and apparel industry with a view to identifying ways in which small to medium-sized enterprises in low-middle income economies such as Indonesia might comply with emerging sustainability indicators.

Data gathered from multi-national and small to medium-sized enterprises provided insights on current implementations of environmental and social sustainability practices in the Indonesian textile and apparel industry. This led to the design of a questionnaire that was used to elicit stakeholder perceptions of how sustainability requirements are addressed. This was supplemented with data collected through field site observations and semi-structured face-to-face interviews that captured real-life experiences of the phenomenon of sustainability. In parallel, data was gathered from industry stakeholders (including customers, regulators, and non-governmental organizations) on drivers for and challenges of adopting sustainability practices in accordance with customers' codes of conduct.

From the fieldwork, sustainability practices, while desirable, are perceived as having a detrimental impact on performance indicators such as time and cost. Supply network maps were used to visualise the flow of materials and information through case study networks. A key characteristic identified from the maps was the industrial cluster whose agents act as interfaces between Indonesian suppliers and their ultimate customers. Early results from a social network analysis indicate that these agents are dominant actors and agents of change in critical to the adoption of sustainability practices by Indonesian suppliers.

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Chapter 1
Introduction

1.1 Background and Problem Statement

In order to gain advantages in the global economy, Indonesia is one of the initiators of inter-governmental organisations, namely The Association of South East Asian Nations, which was established in 1967. Nowadays, ASEAN comprises 10 members, including Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei Darussalam, Cambodia, Lao PDR, Myanmar and Vietnam. The organisation is aiming at co-operating in the areas of the economy, culture and societally in relations with its members, and also at promoting ASEAN natural and human resources on a global scale. ASEAN members made the decision to embrace a free trade zone by signing a free trade agreement. The agreement is not only applicable across the other ASEAN countries, but also includes an agreement with other nations worldwide.

Indonesia is a country situated in South East Asia. The population of 249 million in 2013 listed Indonesia as the third largest population in Asia, after China and India. It is a tropical country with over 13,000 islands spread over 1,922,570 km^2. The five largest islands are Java, Sumatera, Kalimantan, Sulawesi and Papua. Java has the largest population, totalling at least 140 million people. Meanwhile, Kalimantan has the largest land area, equating to 540,000 km^2. Indonesia's bordering countries include Malaysia, Brunei, Timor Leste and Papua New Guinea, as well as sea borders with The Philippines, China, Singapore and Australia. Figure 1.1 provides an atlas of Indonesia.

Figure 1.1 Geographical map of Indonesia (Source: World Atlas, 2014)

The ASEAN Economic Community is considered the most recent free trade agreement amongst ASEAN members. Furthermore, the ASEAN Economic Community is part of the ASEAN programme, which seeks to link a single free region in the movement of goods, services, skilled labour and investment flow or otherwise to gain competitive advantages in the global economy.

In spite of its advantages, such as the ASEAN Free Trade Agreement, through which India is creating an intra-regional market of 1.8 billion people, small- and medium-sized enterprises are in the majority amongst ASEAN member countries, which therefore tend to struggle to enter the global market. However, these enterprises are under pressure to cope with increasing global awareness in environmental and social sustainability issues. As Indonesia comprises a population of 249 million, it is calculated as having the largest population amongst ASEAN members. In consequence, the number of Indonesian SMEs is highlighted as the highest number in comparison to other members.

The textile and apparel sector is a substantial proportion of the world's economy. Notably, 7% of the total world's exports are in textiles and apparel. Developing countries in Asia are dominating these sectors, with China recognised as the most dominant exporter worldwide (Institute of Manufacturing, Cambridge University, 2006). The ASEAN region and certain ASEAN countries are notable suppliers of textiles and apparel to the world. For example, ASEAN countries accounted for 7.2% of total world exports. The broader priority sector covers other important areas, such cotton woven textiles and apparel, man-made fibres and fabrics, all of which are important to various ASEAN producers, particularly in Indonesia and Vietnam.

The textile and apparel industry is highlighted as a primary export commodity in Indonesia. The commodity has been estimated as the third largest national non-oil export, together with the steel industry and palm oil industry. Apparel product accounted for 70% of total exports, followed by textiles and yarns. The apparel-production process is labour-intensive as opposed to being high-technology in nature. The availability of human resources in Indonesia seems unlimited as the country is listed as the fourth largest country in the world in regard to population.

However, the high population has both positive and negative consequences: on the one hand, low-cost production as a result of unlimited human resources gains an advantage by eliminating product shortages; on the other hand, however, Indonesia is recognised as a potential market

for textile and apparel producers overseas due to high demand in the domestic market. The key challenges to Indonesian SMEs include a lack of awareness of its potential and weaknesses, and struggling to meet environment and social sustainability, all of which are barriers to entering the global market.

1.1.1 The Textile and Apparel Industry and their Contribution to the Indonesian Economy

Indonesia is listed as the eighth exporter of apparel and the eleventh exporter of textiles worldwide (World Trade Organisation, 2014). China dominates at least 40% of the total exports worldwide. This nation contributes 1.8% of total exports worldwide, with trading values equating to US$13 billion in 2014 (Indonesian Ministry of Trade, 2014). The Indonesian Ministry of Trade reported that total sales for the domestic and international markets have increased slightly during the past four years. In this vein, Figure 1.2 represents the national exports and imports of textiles for the period spanning 2000–2013.

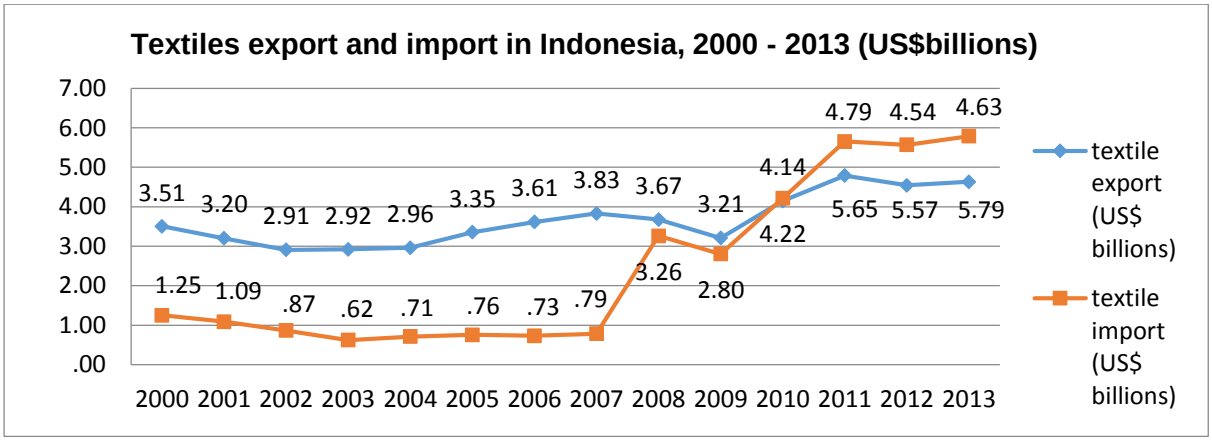

Figure 1.2 Textiles export and import in Indonesia from 2000 to 2013 (WTO, 2014)

It can be seen from Figure 1.2 that the trend of textile exports has considerably increased over the recent fourteen years. International demands of textile products have also been increasing over five years. It was expected that the positive trend of the international market would remain constant in line with the positive trend towards the global economy. In contrast, the import of the goods has been significantly increasing, as can be seen when considering the total of US$1.25 billion in 2000, which increased to US$4.63 billion in 2013. Textile imports are

concerned with raw materials for apparel enterprises. Further data of apparel exports and imports in Indonesia can be seen depicted in Figure 1.3.

Figure 1.3 Apparel export and import in Indonesia from 2000 to 2013 (WTO, 2014)

As is shown in Figure 1.3, the international demands of apparel products have been increasing in the last fourteen years. The highest export was calculated to amount to US$8.05 billion in 2011. There was slight fall by US$0.5 billion in 2012, and in 2013 there was a slight increase amounting to US$7.69 billion. However, imports for these goods were the opposite. Ten nations, including the USA, Japan, Germany, Turkey, South Korea, China, The United Arab Emirates, Brazil and the United Kingdom are all listed as dominant importers for the past five years. Apparels is counted as the most dominant goods exported, accounting for 58.2% of the total national non-oil export. In addition, yarn and fabric exports were listed as the second and third ranked, with an export percentage of 19.1% and 14%, respectively. Fibre generated 4.4% whilst other apparels and textile goods accounted for 4% of the total exports last year (Indonesian Textile Association, 2014). Export growth for the national textiles and apparel industry is expected to reach 4.48% in 2015 (ibid). However, the national exports of apparel are lower than three Asian countries, namely Vietnam, Bangladesh and India. Vietnam and India count for more than US$14.00 billion for apparel exports, and Bangladesh count for US$19.00 billion.

1.1.2 The Development of the Textile and Apparel Industry in Indonesia

The textile industry is considered the first modern manufacturing industry to have been developed since the beginning of industrialisation in Indonesia. Historically, the textile and apparel industry has been established there since the 7th Century. Figure 1.4 depicts the development of the textile and apparel industry in Indonesia.

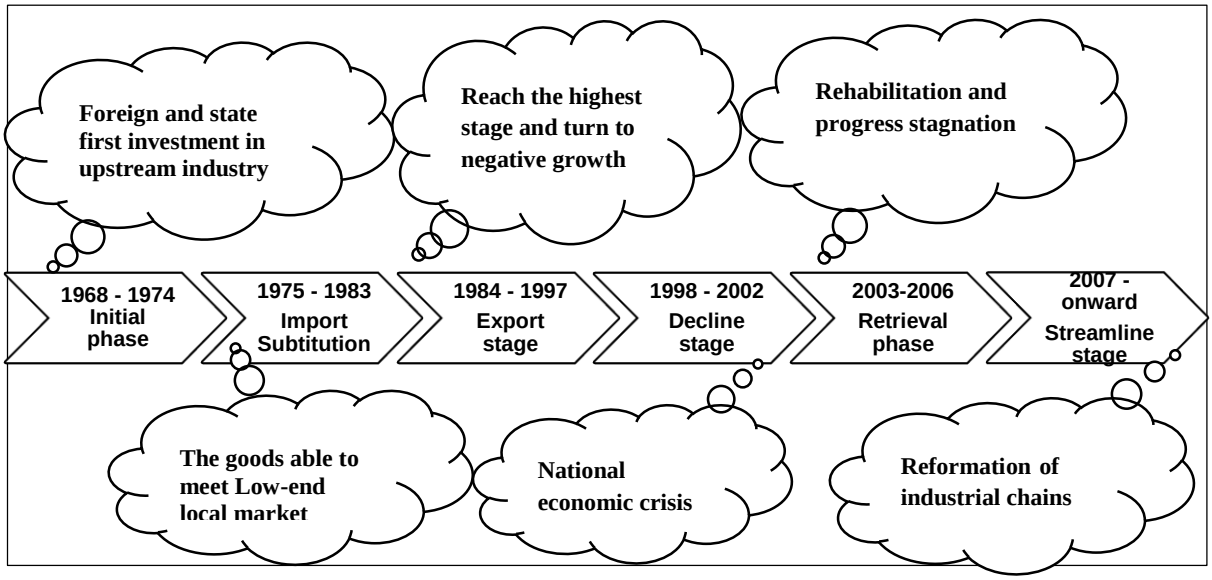

Figure 1.4 The developments of the Indonesian Textile and Apparel Industry (Source: Author's own illustration)

It can be seen in Figure 1.4 that songket was the first woven fabric to have been made using traditional looms. People in Sumatera Island used the handcrafted woven technique. In the early 18th Century, batik textile and apparel was produced in Java Island. The development of the home textile industry in knitting and weaving products was first instigated in 1929. The goods are traditional craft fabrics made into items such as sarongs, cloth, belts and scarves. Furthermore, looms were introduced in 1939. The following years were recognised as the development of a new technology era of textile and apparel products.

The development phase of the textile industry in East Asia and Southeast Asia was associated with the development of the same industry in Japan. In 1968, Indonesia's textile industry was established with Japanese investment in the spinning and fabricated fibre-making industry. Furthermore, Japanese investment was significantly increased due to the increase in Japan's labour costs and labour shortages. In consequence, Japanese investors shifted their production sites to countries such as Indonesia, which had comparatively truncated labour costs.

Meanwhile, state investment in the textile industry was initiated in 1968. However, the necessity to import products, such as cotton and textile machinery, remained high at 99%, 100% for the import of synthetic fibre and 95% for textile dyes. At the same time, the development of modern textile industries, such as textile bleaching, dyeing and printing, were growing. The first modern industrial apparel factory was established in the late-1970s. As part of the rapid growth of the textile industry in the era of import substitution, the apparel and textile industry embraced the export market in 1983 and 1984, respectively. The growth in textile and apparel exports highlighted a positive trend during the period of 1982–1992. Furthermore, apparel exports were higher than the domestic demand for the period 1989–1993. Domestic demand for fabric yarn and fibre was underlined as the majority buyers. In 1993, Indonesia was recognised as the thirteenth major exporter of textiles and apparel worldwide, including countries such as South Korea, Taiwan, China, Pakistan and India. In 1994, the overseas' demand for textile and apparel declined, with negative growth remaining steady until the Indonesian economic crisis at the end of 1996.

During the national economic crisis era of 1997, the majority of textile and apparel producers experienced bankruptcy. The second growth of the textile and apparel industry occurred in 2003; however, recovery was very slow due to less support from banking and financial institutions, which considered the textile and apparel industry as unfavourable and a high-risk investment. Meanwhile, the business environment remained unfavourable due to a lack of government support. The beginning of 2007 was highlighted as the turning point of the textile and apparel industry, which, at this point in time, started to rise. Financial Institutions also acknowledged that the industry was now considered a potential area for investment. In early-2011, a number of countries, such as South Korea, China and Taiwan, selected Indonesia as the production base of the textile industry. Java Island was chosen as a prospective base owing to its availability of workers with the necessary skills, its strategic location, and also owing to the fact it already had support infrastructure in place.

Besides the numerous contributions to Indonesia's trade balance, the domestic market is a potential market for apparel and textile producers. The demands for textile and apparel imports were enormous, with product variety ranging from value goods to premium brands. Like any other developing nation, small- and medium-sized enterprises make up the majority of the textile and apparel enterprises in Indonesia, with such enterprises becoming major economic players during the economic crisis of 1997–1998. In addition, the SMEs seemed to have the

flexibility to adapt to the changes in the market, contributing at least 58% of total GDP (Gross Domestic Product) in 2013 (The Indonesian Ministry of SMSEs, 2014). The textile and apparel industry, together with furniture, are recognised as the two largest national non-oil exports in comparison to other business sectors operated by SMEs.

Batik textiles and apparel are well known as the majority goods produced by small- and medium-sized enterprises. Batik textiles are more dominant goods than apparel. The production processes of batik textiles use both traditional processes and man-made products. Batik is a technique used in creating apparel materials. Two definitions of Batik have been provided: firstly, batik is seen to refer to a wax-resistant dyeing technique; and secondly, batik may refer to a type of fabric using certain motifs that have peculiarities. In general, the batik technique can be divided into three types, namely batik hand painting, batik stamping and batik as a mixture of hand painting and stamping. Hand-made batik is drawn manually with the use of special equipment called canting and melted-wax owing to its dye-resistant properties. A piece of batik hand painting, the size of which is 3.0 metres in length and 1.20 metres in height, requires 3–6 months for completion. Batik apparel hand-painting production processes is depicted in Figure 1.5

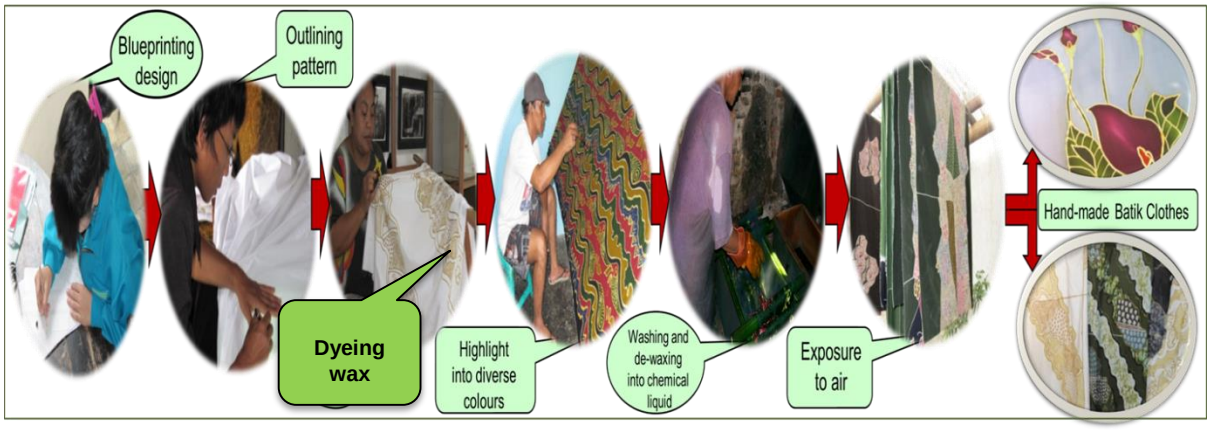

Figure 1.5 batik apparel hand-painting production processes (Source: Author's own illustration).

It can be seen in Figure 1.5 that blueprinting design is the first stage of batik textile making, and followed by outlining the pattern onto pieces of fabric. After that, dyeing wax is drawn manually, followed by strengthen the pattern. The next stage is dewaxing and washing the

fabric using chemical liquid and expose to air is last stage in producing hand-painting batik textile.

A copper block and a dye-resistant technique are used to draw the patterns for batik stamping. The production process of batik stamping is quicker than batik hand painting. Copper block and stamping process of batik apparel is presented at Figure 1.7

Figure 1.6 Hand-stamping batik process

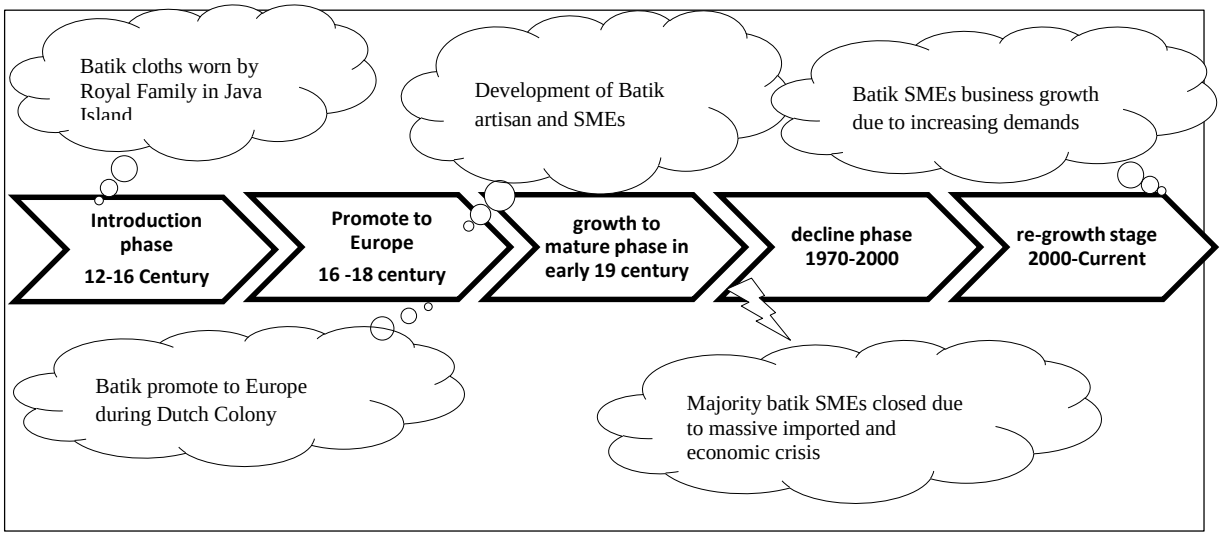

Figure 1.7 The History of Batik Artisans and Batik SMEs in Indonesia (Source: Author's own illustration).

The batik technique was first discovered in Egypt in the 4th Century BC, during which time mummies were found wrapped in wax-coated cloth. In addition, the batik techniques and apparel have been developed since The Kingdom of Majapahit on Java Island of Indonesia

during the 12th Century. In the Dutch Colony in the 17th Century, Dutch merchants brought batik apparel from Java Island to Holland. Furthermore, they participated in the exhibition in Paris. Batik textiles were tremendously developed during the late-18th Century. The growth of batik artisans and sole owner-enterprises developed rapidly at the beginning of the 19th Century. The majority of batik enterprises have been established in the Provinces of Central Java and Yogyakarta, with the development of such remaining constant until 1969. In 1970, a number of batik enterprises were declared bankrupt as a result of low-cost imported textiles from China. Numerous batik SMEs had to close down due to the economic crisis spanning 1980–1999.

In early 2000, a number of batik enterprises re-opened due to increasing domestic and international demands. Nowadays, a number of batik SME clusters have begun to develop, gaining opportunity from both the domestic and international markets. The majority of enterprises are considered micro, i.e. small- to medium-sized enterprises, whilst at least 80% of the apparels produced by big enterprises are exported whereas 20% is supplied to the domestic market. Large-scale enterprises and a small number of medium-sized enterprises are export-oriented producers, whilst micro, small and the majority of medium-sized enterprises are focused on supplying the domestic market.

1.1.3 Roadmap of Indonesian Textile and Apparel Industry

As a primary export commodity, the Government of Indonesia established a roadmap of the textile and apparel industry. Fabrics are made based on natural and chemical resources; thus, the textile and apparel industry is integrated with other industries, such as agriculture, forestry and the chemical industry. The Government of Indonesia developed a grand design of the textile and apparel industry, including the mapping of an industrial tree, visualising industrial streams, and accordingly establishing a roadmap of the industry.

The Government of Indonesia further established a textile and apparel industrial tree with the objective to breakdown detailed information surrounding the textile and apparel sector from upstream, midstream and downstream industry. In addition, the industrial tree provides information relating to any other industry linked with the textile and apparel industry in Indonesia. Figure 1.8 presents the textile and apparel industry industrial tree.

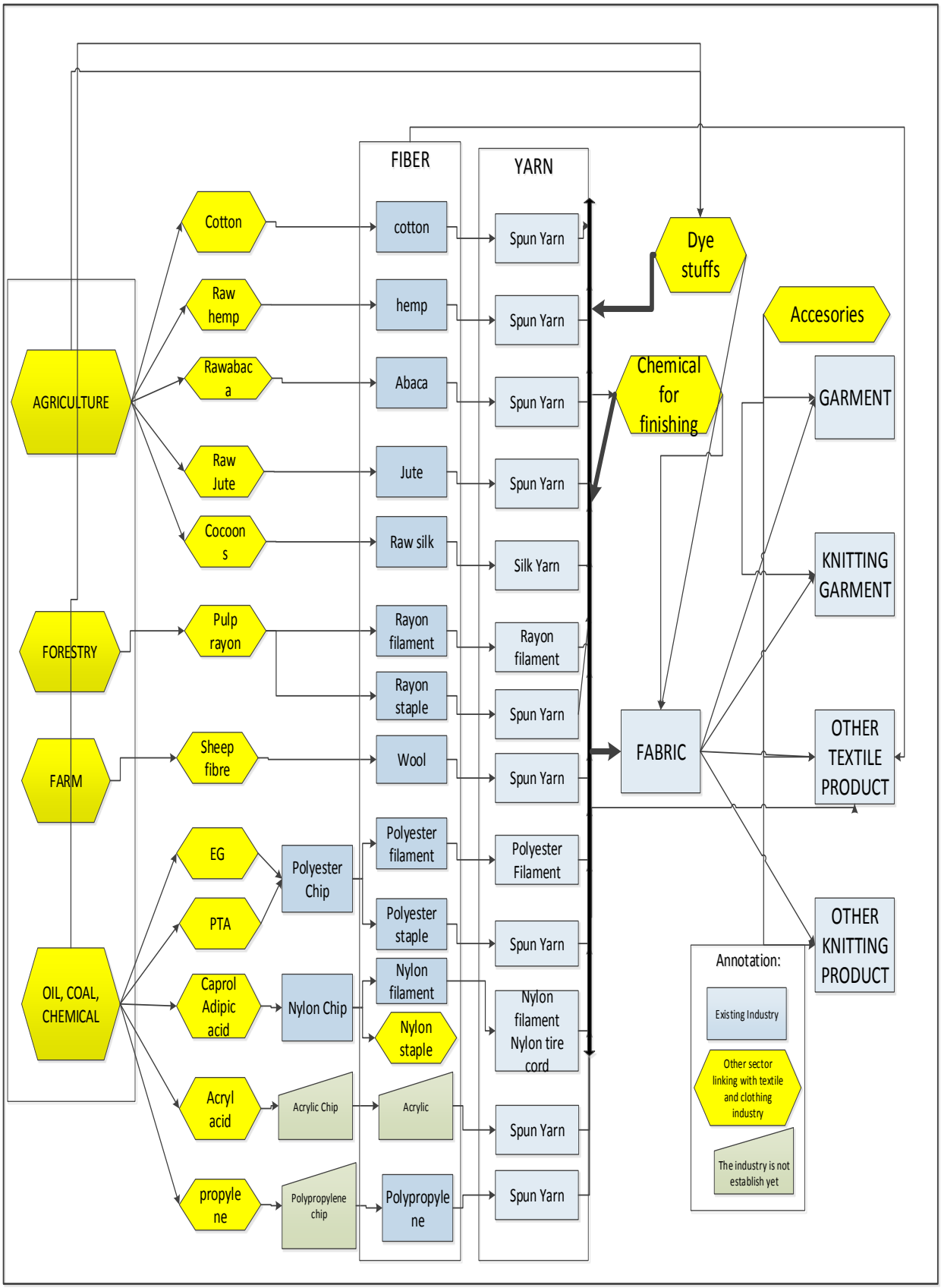

Figure 1.8 Indonesian Textile and apparel industrial tree

(Source: Ministry of Industry, 2013)

As is shown in the Figure 1.6, there are other industrial sectors, such as forestry, agriculture, farming, oil, mining and chemical, which are linked with the textile and apparel industry. Moreover, the textile and apparel industry in Indonesia has been developing as a major part of the industrial sector, and as such, the supporting industries are needed to form the support chain of the whole industry upstream and downstream.

The downstream industrial sector is the type of industry that produces natural and synthetic fibres, as well as the spinning and dyeing of yarn. Upstream sectors refer to capital intensive, full automatic production processes, large-scale enterprise, and various out-put capacity. The upstream industrial sectors are divided into two groups namely natural resources and chemical resources. Agriculture, forestry, and farming are listed as natural resource-based industries. Rayon and hemp are the most dominant sectors in agricultural manufacturing, contributing raw materials for domestic demand and also for export. In addition, cotton, sheep fibre and cocoon farming did not develop well in Indonesia. The forestry sector is also recognised as a prominent commodity as the availability of dissolving pulp in Indonesia is unlimited. Indonesia is considered to be the seventh largest producer of artificial fibres worldwide. The nation supplies up to 10% of rayon fibres worldwide.

The upstream industrial sector is considered the capital investment industry as opposed to labour investment; however, this sector has been growing steadily in line with the increasing demand, both domestically and worldwide. The midstream industry sectors include grey weaving yarn into fabric through the process of weaving, knitting, dyeing, printing and finishing. Moreover, the midstream sector is semi-capital, intermediate and modern technology, where the number of employees is greater than in the upstream sector. In contrast, the midstream sector industry could not, by itself, meet both domestic and export demands. The industrial sectors require semi-high technology to produce goods. Technology developments in machinery in the midstream industrial sectors have rapidly changed: very high capital investment is needed to boost both production capacity and the quality of the end products; therefore, the development of subsidiary industrial sectors in Indonesia is not as fast as downstream as in the upstream industries.

The Ministry of Industry (2012) reported that at least 50% of the goods are used by the domestic spinning industry whilst the remainder is exported. Primary importers of the grey fabric are Europe and the Middle East. The downstream sector is apparel and other apparel products processes, including marking, cutting, sewing, washing, trimming and finishing. Apparel-production is recognised as the largest export commodity, followed by yarn and textiles. The downstream

industrial sector is the most labour-intensive industry. This stream chain is highlighted as the industrial sector that has been rapidly growing since the economic crisis in Indonesia in 1996.

It can be seen from Figure 1.6 above that the textile and apparel industrial sector in Indonesia has been documented from the upstream industrial sector, such as agriculture, chemical, forestry and farm, the middle stream industrial sector of fibres and yarn, and lastly the downstream industry, such as apparel and apparel accessories. The development of the textile and apparel industrial sector in Indonesia has been increasing in line with the growing demand of the goods from local and overseas customers. As this industry is regarded as one of primary export products, therefore, the Government of Indonesia has established an integrated roadmap of the textile and apparel industry based on Indonesian Law No. 2 of 2008. Figure 1.9 shows a roadmap of the textile and apparel industry in Indonesia.

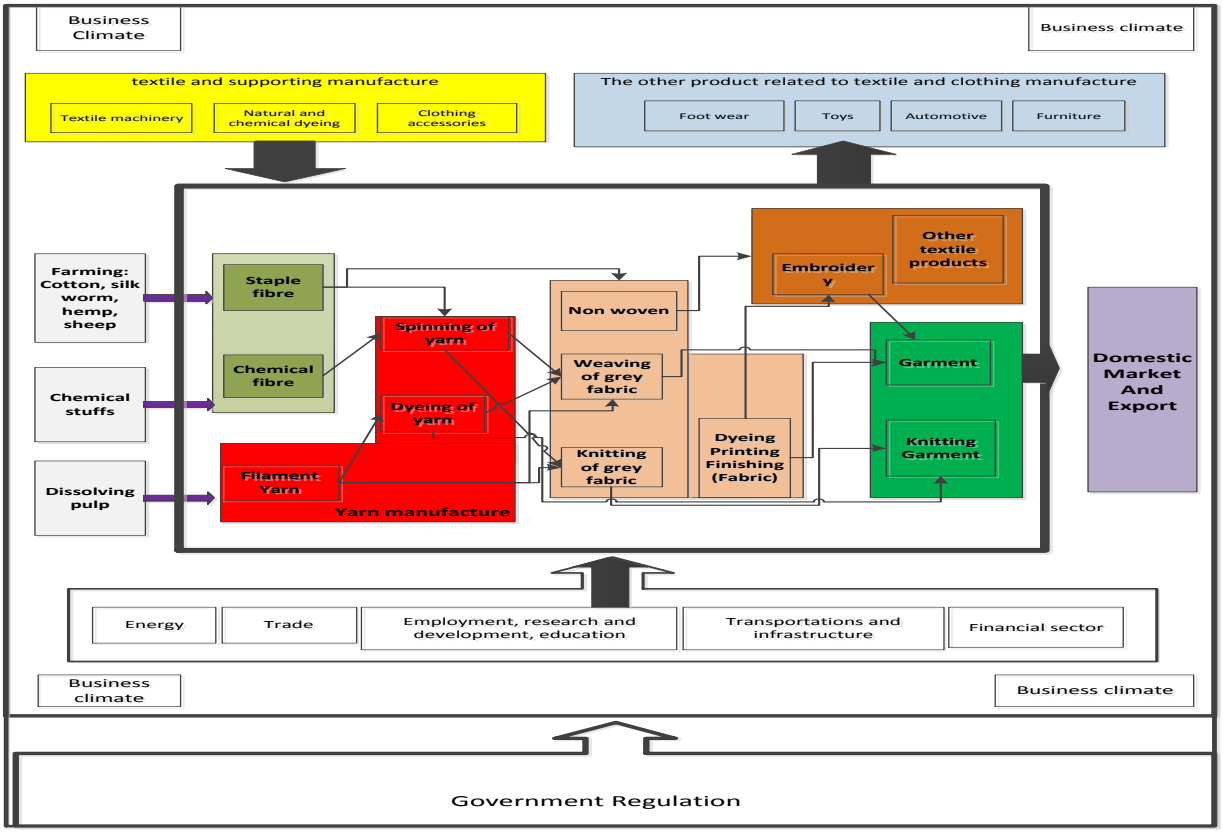

Figure 1.9 Integrated Roadmap of the Textile and Apparel Industry (Source: Ministry of Industry, 2013)

It can be seen from Figure 1.7 that the textile and apparel industry is classified into five industrial chains, namely fibre, spinning, textile, apparel and other apparel. An overview of the five industries is explained as follows:

1. **Fibre industry** is a type of manufacturing process of fibres based on natural and chemical resources.
2. **Spinning industry** includes filament and yarn resulting from the fibre sector.
3. **Textile industry** is the production process of textiles. The industrial sectors include weaving, dyeing, printing, finishing, knitting and non-woven fabrics.
4. **Apparel industry** includes the apparel production process and the knitting production process.
5. **Other apparel products industry** includes the goods for the automotive, furniture, interior design, and home textile product sectors.

The development of the supporting industry, including textile machinery and linking the industry with other industrial sectors, such as farming, forestry and the chemical industry, have been working to boost the existence of the textile and apparel industry in Indonesia. The Ministry of Industry has been establishing an action plan centred on achieving long-term goals in the textile and apparel industry. In general, there were six priorities contained in the action plan, as follows:

1. Restructuring textile technology and machinery.
2. Enhancing the competence of human resources in the textile and apparel industry.
3. Improving the facilities of the creative fashion industry.
4. Developing industrial clusters.
5. Implementing better arrangements for the availability of raw materials.
6. Developing the textile and apparel industry in terms of sustainability and in accordance with international standards.

1.1.4 Sustainability Issues in the Indonesian Textile and Apparel Industry

In order to gain a better understanding of the current issues in the textile and apparel industry, a SWOT analysis was initiated. The mapping of strengths, weaknesses, opportunities and threats portrays a systematic picture of the organisational internal and external environment (Kotler, 2003). Table 1.1 presents the SWOT analysis of the textile and apparel industry in Indonesia. It can be seen from the Table that the strengths, weaknesses, opportunities and

threats analysis can be distinguished in terms of economic, social and environmental sustainability.

Table 1.1 Triple bottom line linking to SWOT analysis (Source: Summarised from the Indonesian Textile and Apparel Expert, unpublished report, 2014)

Triple Bottom Line linking to SWOT analysis		Economic	Environment	Social
Strengths	50% of Indonesian non-oil export includes textiles, apparel, and furniture	√		
	Government support in finance and regulations	√		√
	Low cost production	√	√	√
Weaknesses	Weak to meet sustainability standard requirement by customers from developed nations	√	√	√
	Textile industries use old technology in production process	√		√
	The SMEs are less aware than MNEs in adopting social and environmental sustainability		√	√
Opportunities	Free trade agreement with the countries as classified high-income economy to expand the market	√	√	√
	Demand for goods is growing rapidly from developed nations	√		√
	Government agency developed Indonesian National Standard based on World Trade Organisations codes of good practice	√	√	√
Threats	Face significantly growing competition from other ASEAN members such as Vietnam, Cambodia, and Thailand	√		√
	Unfair business practices among SMEs	√		√
	Issues arise in unfair wages and health and safety standards	√	√	√

Batik textiles and apparel is well recognised as the major product of small- and medium-sized enterprises. Batik textiles are a more dominant part of the apparel industry. The production processes of batik textiles incorporate both traditional processes and man-made products. In much the same way as SMEs in other developed nations, batik SMEs in Indonesia have faced

problems in regard to limited resources in capital, low product quality and human resources. The Government of Indonesia—as well as national and international NGOs—has been supporting SMEs through empowerment programmes; however, as SMEs have complex problems, the programmes have been unsuccessful.

1.2 Aim and Objectives

The Indonesian textile and apparel Industry is considered to be the leading non-oil export sector, with these industries recognised as one of the leading exporters worldwide (Indonesian Ministry of Industry, 2014). However, the textile and apparel industry has both opportunities and challenges to expand their market on a global scale. On the one hand, the good quality of textiles and apparel made in Indonesia is acknowledged by internationally prominent-brands, meaning demands from international textile and apparel prominent brands have been experiencing tremendous growth; on the other hand, however, growing competitors from ASEAN member countries, including Thailand, Vietnam and Cambodia, need to be anticipated, with the additional issue that national enterprises have been struggling to deal with local issues, including high increases in national minimum wage in during last five years, with the national minimum wage in Indonesia recognised as higher than Vietnam, Cambodia, Bangladesh and India (Ministry of Industry of Indonesia, 2014). In addition, other hidden costs have caused large enterprises to struggle to reduce their production costs.

The majority of apparel and textile goods are contributed by SMEs. SME producers contribute 50% of national non-oil exports, with SMEs under pressure to increase competitive advantages to embrace regional and international markets due to the effectiveness of Free Trade Agreements and the ASEAN Economic Community in 2015. Being classified as a lower middle-income economy country, Indonesian SMEs need to understand the implications of the requirements for sustainability in regard to how they behave, both strategically and operationally. In addition, phenomenon of sustainability in the supply network context in developing countries, such as that of Indonesia, requires further investigation in order to reveal sustainability perspectives from textile and apparel suppliers.

This research addressed the following questions.

1. What do textile and apparel enterprises in developing countries such as Indonesia perceive requirements for sustainable business practices imposed by customers?
2. How do Indonesian textile and apparel enterprises comply with these requirements and what are opportunities for further improvement?

Sustainability is embedded with the term of sustainable development, which was established by The United Nation in 1987. Sustainability in terms of business is related to activities surrounding the provision of goods and/or services—not only in regard to ensuring they are economically beneficial but also responsible in retaining social and environmental impact of such types of activity. In addition, implementing social and environmental sustainability practices to support economic sustainability is recognised as the major approach in evaluating sustainability in the textile and apparel industry. As the world is concerned about the depletion of global resources, sustainable development has been proposed. Elkington (1998) implemented sustainability within the triple bottom line of economic prosperity, environmental quality and social equity. Industrialised countries have been adopting triple bottom line in their organisations. Nowadays, developing countries are under pressure to cope with triple bottom line issues. Desirably or undesirably, Indonesian SMEs are now required to meet the challenges facing the global market. In general, issues arising in terms of the triple bottom line of Indonesian SMEs are shown in Figure 1.10.

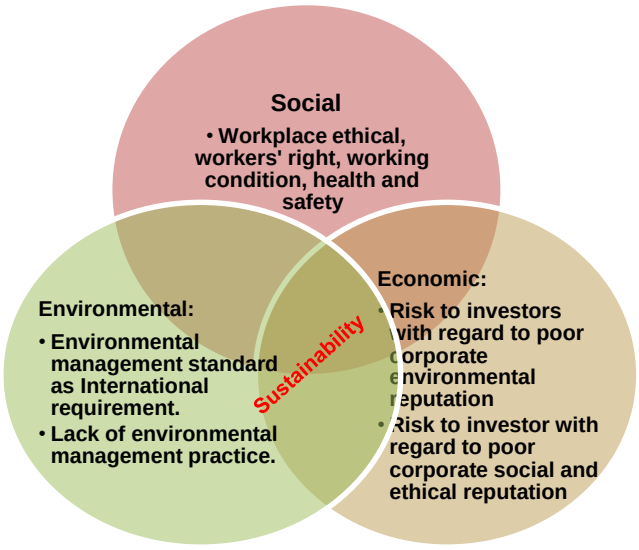

Figure 1.10 Sustainability Issues in Indonesian batik textile and apparel SMEs (Source: Indonesian Ministry of SMEs, 2014)

The aim of this research was to improve understanding of sustainable supply networks operation in the Indonesian textile and apparel industry with a view to identifying ways in which SMEs in low-middle income economies such as Indonesia might comply with emerging sustainability indicators. The following research objectives were pursued.

1. To identify current priorities and requirements for sustainability management practices in the textile and apparel industry.
2. To develop research instruments to explore perceptions of sustainability for different groups of stakeholder in make supply networks singular.
3. To specify a case study from the Indonesian textile and apparel industry and use it to (a) specify sustainability requirements derived from customers' priorities, (b) create maps of at least two groups of Indonesian supply networks including multi-national enterprises and small- to medium-sized enterprises and (c) analyse the maps to identify enablers for the delivery of sustainability requirements.
4. To elicit different perceptions of sustainability in the Indonesian textile and apparel industry stakeholders through interviews in the case study.
5. To use social network analysis to identify dominant actors within the case study.

1.3 Thesis Structure

Seven chapters make up this thesis, including Introduction, Literature Review, Research Methodology, Design of the Research Instruments, Result Perspective of Sustainability from Indonesian Textile and Apparel Stakeholders, Visualise Sustainable Supply Networks in Indonesian Textile and Apparel Industrial Cluster using Social Network Analysis Approach, and lastly, Conclusions and Future Work.

Chapter 1 begins with the research background and the rationale behind selecting the industry that has become the subject of examination in this research. An overview of the textile and apparel in Indonesia, as well as the various strengths, weaknesses, opportunities and threats are considered in regard to the current situation of the Indonesian textile and apparel industry. Once the research question is derived, the research aim and objectives are presented, as well as the structure of the thesis.

The Literature Review is presented in Chapter 2. Furthermore, a review of the empirical literature concerning the definition of sustainability, supply networks and linking sustainability to supply networks and accordingly selecting a suitable definition in line with the context of the textile and apparel industry in Indonesia is presented. In addition, drivers and challenges with regard to management practices, based on the perspective of textile and apparel stakeholders in developed and developing countries to comply with evolving sustainability requirements are highlighted. This Chapter portrays the way in which the gap in the empirical study and previous framework in linking sustainability to supply networks in developed and developing countries can be filled, whilst also drawing a conclusion that the idea to become more sustainable in textile and apparel enterprises in developing countries is a necessity centred on winning the competition to embrace global markets.

Chapter 3 explains the research methodology and the various stages of the research process. Descriptive analysis is used to portray the profile of people, actors, events or situations of the case study, and explanatory analysis will be used to ascertain what is happening. A balanced method is used as the research approach. The research process, starting with the preparation stages, research protocol, data gathering and accordingly selecting the method to use in analysing the data, is presented in this Chapter.

Chapter 4 discusses the instrument development, including case study protocol and supply network maps prior to writing up the findings and lessons learnt concerning the case study evidence.

Chapter 5 explores the case study findings in the Indonesian textile and apparel enterprises, along with their stakeholders. A case study is presented in order to provide give a deeper understanding with regard to the various issues, opportunities and challenges in Indonesian textile and apparel industry enterprises.

Chapter 6 explores visualising supply networks linking to sustainability using the social network analysis approach. This Chapter reveals the relationship, interdependencies and actor-relationships between organisations within various stakeholders of SME supply networks in an effort to deliver a sustainable performance.

The Conclusions are presented in the final Chapter, Chapter 7. This Chapter includes research contributions, limitations and future work.

Chapter 2
Literature Review

This Chapter explores the phenomenon of social, environmental, and economic sustainability in the context of textile and apparel industry supply networks. Sustainability management practices located in developed and developing nations are considered in detail. The literature review was initiated through a search using the following keywords: sustainability, supply network, sustainable supply network and textile and apparel industry. This led to the overall structure of this Chapter that is provided in Figure 2.1.

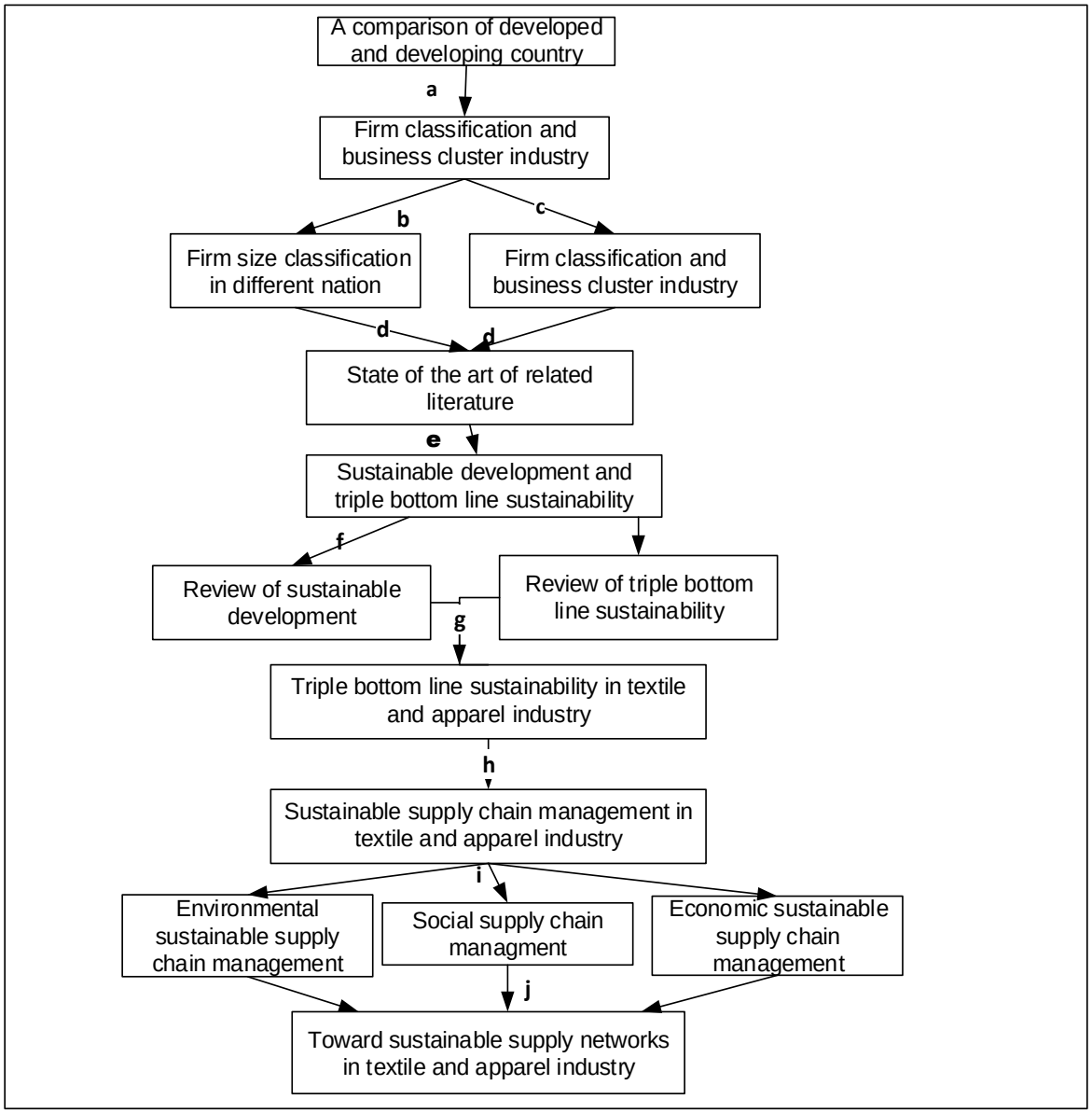

Figure 2.1 Structure of Literature Review (Source: own illustration)

The review of literature includes two core areas of research: sustainability and supply network. In both areas, the review focused on literature that enabled a comparison to be completed between the developed and developing country areas. This led to a review of sustainable supply network in the textile and apparel industry. Figure 2.1 shows differences between developed and developing countries, *a*, led to the distinction of enterprise classification and business cluster industry within the enterprises' size at *b* and *c*. Once the state-of-the-art references of enterprise classification and business cluster industry is summarised as result of *d* and *e*, the next stage is reviewing sustainable development and triple bottom line sustainability at *f*. The result from *g* is directed towards reviewing triple bottom line sustainability on textile and apparel industry. Once the state-of-the-art references are summarised on *g*, the next stage is reviewing social, environmental and economic sustainable supply chain management on *i*. Result from *j* then led to reviewing related references towards sustainable supply network in the textile and apparel industry.

This Chapter consists of seven sections. Firstly, a comparison between developed and developing countries is presented in Section 2.1. The distinction between enterprises in terms of size and business industrial cluster is explained in Section 2.2. A review of improvements in sustainable development agendas, as the backbone to sustainability practice is presented in Section 2.3, including evidence gathered to explore what scholars acknowledge in the development of triple bottom line sustainability, from theory through to practice. Sections 2.4 and 2.5 elucidate supply network theory and approaches concerning the development of supply network, and what scholars propose in regard to mapping supply networks, specifically in the textile and apparel industry. Section 2.6 delivers information relating to triple bottom line sustainability and supply chain management, including literature related to social, environmental and economic sustainable supply chain management in the textile and apparel industry. A review of what previous researchers have developed in connection with sustainable supply networks in the textile and apparel industry is reported in Section 2.6. Advantages, improvements and obstacles identified in the implementation of a sustainable supply networks in developed and developing countries are taken into consideration in proposing a theoretical framework towards a sustainable supply network. Section 2.7 presents a summary of key conclusions drawn from of the literature review.

2.1 A Comparison of Developed and Developing Countries

The United Nation is listed as the biggest organisation in the world. The organisation was established in 1945, and aims at sustaining global harmony, security, better relationships amongst nations, enhanced living customaries, and human rights. As the biggest organisation in the world, the UN has 193 member states, which can be found on five continents, including Asia, Africa, Europe, Australia and America. The UN adopted the right and responsibilities of countries, which were defined in the Montevideo Convention (1933) as follows:

'*The state as a person of international law should possess the following qualifications: (a) a permanent population; (b) a defined territory; (c) government; and (d) capacity to enter into relations with the other states*.'

The majority of people amongst the seven billions worldwide reside in UN member countries. With people living in at least two hundred countries worldwide, there is much diversity in terms of a country's population, ranging from 1 million to 1 billion in each nation, with variation also witnessed in regard to the human development index, from low to high, the availability of natural resources from zero to abundant, and country debt from low to high. In consequence, there are expressions allowing distinctions to be made between prosperous and less fortunate countries. This dissimilarity refers to the economy. There are three specific categorisations regarding a country in terms of the economy, which include developed countries, developing states and lesser developed nations. Developed countries are well-known as being affluent countries, whilst lesser developed nations are the opposite; developing nations are the trade-offs between these two types of country; however, there is no recognised settlement for the description of 'developed', 'developing' and 'least developed' states in the United Nations.

In addition, The World Bank classifies countries into four income economy groups for statistical and operational purposes, namely low-income economy country, lower middle-income economy nation, upper middle-income nation and high income-economy country. The core measures of taxonomy are Gross National Income (GNI) per capita. GNI is the dollar rate of a country's closing annual income, divided by its population. GNI signifies the regular annual income of a country's citizens. The resulting assortments of country economies are presented in the following order (World Bank, 2014):

- Low-income economy countries have a GNI per capita of US$1,045 or less.

- Lower middle-income economy countries have a GNI per capita of between US$1,045 and US$4,124.
- Upper middle-income economy countries have a GNI per capita of between US$4,125 and US$12,745.
- High-income economy countries have a GNI of above US$12,746.

The Word Bank classifies 39 countries as having a low-income economy, whilst 67 nations are listed as having a high income-economy, 56 countries are considered as having a low middle-income economy, and 47 nations are recognised as being of an upper middle-income economy (World Bank, 2014). Country classification in terms of income economy is presented in Figure 2.2.

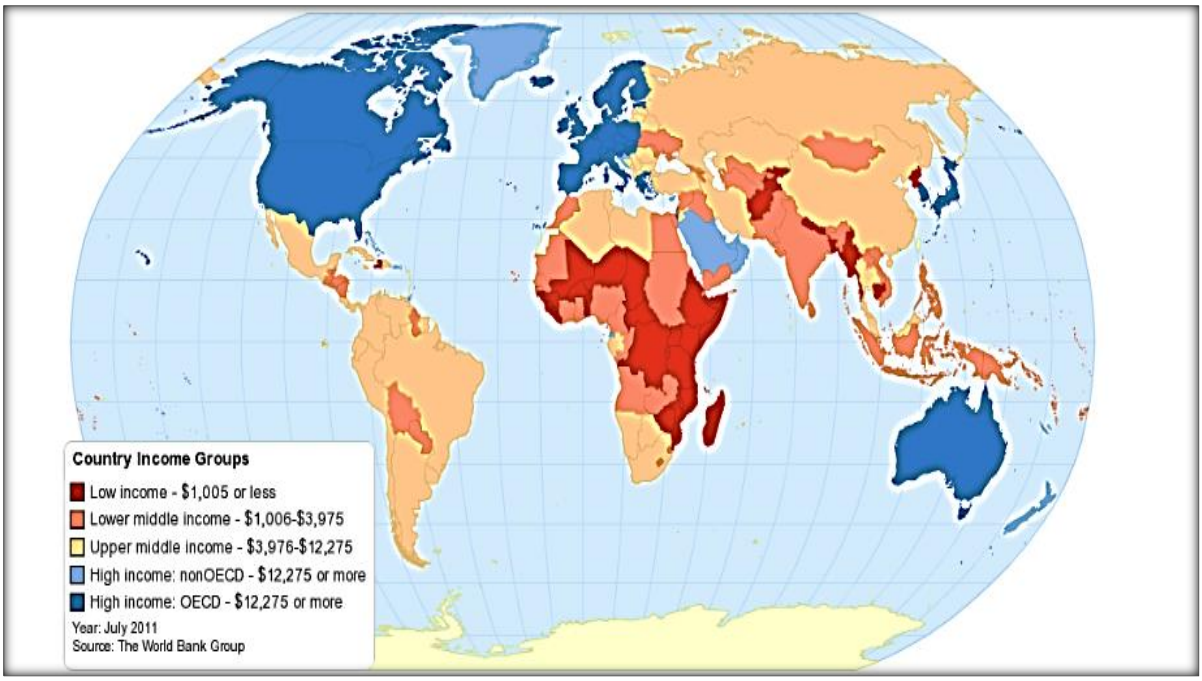

Figure 2.2 The World Income Economy Classification (Sources: World Bank, 2011)

Amongst the World Bank member countries, ASEAN members, including Cambodia, Laos and Myanmar, were listed as part of the low-income economy group. In addition, Indonesia, Philippines and Vietnam were listed in lower middle-income economy countries. Malaysia and Thailand are ASEAN members that are included in the upper middle-income economy. The rest of the ASEAN members, including Brunei, Darussalam and Singapore, are listed as being in the high-income economy bracket. In general, a developed country is related to a country that is listed as part of the upper middle-income economy or high income-economy.

Meanwhile, developing countries are listed in the low-income and lower middle-income economy brackets.

2.2 Enterprise Size and Business Cluster Industry in a Global Economy

Organisations comprise a group of people that share commonalities. They consist of individuals or groups who create an organisation so as to gain profit in terms of value for money or voluntarily action. Business is a subsidiary of profit organisation. Business is an organisation that has been established, either individually or by a group of people, to provide goods or services. Likewise, a business can be identified as an enterprise, corporation or company. There are a number of methods of categorising in terms of business. One of the methods of grouping companies is size. Businesses are categorised into four different groups, as follows: micro, small, medium and large. Accordingly, these four detachments are categorised into two sets, namely micro, small and medium-sized enterprises, or small- and medium-sized enterprises and big enterprises.

2.2.1 Distinction of Enterprise Size in Different Countries

Each country has its own definition concerning enterprise size (Kumar *et al*., 1999). The European Union established an extract from Article 2 of the Annex of Recommendation 2003/361/EC, defining small and medium enterprises. The number of workers, turnover and balance sheet total are all categorised as factors an enterprise from an SME. Table 2.1 depicts the EU classification of an SME.

Table 2.1 SME Classification in the EU (Source: European Commission, 2014)

Company category	**Employees**	**Turnover (€)**	**or**	**Balance sheet total (€)**
Micro	<10	≤ 2 M		≤ 2 M
Small	<50	≤ 10 M		≤ 10 M
medium	<250	≤ 50 M		≤ 43 M

It can be seen by reviewing Table 2.1 that an enterprise with no more than ten workers, plus a turnover of less than 2 million Euros or a total balance sheet of less than 2 million Euros is

considered a micro enterprise. In addition, small enterprises are defined as those enterprises with workers of less than 50 and a turnover or balance sheet of equating to less than 10 million Euros, whilst a medium-sized enterprise is classified as an enterprise with total employees amounting to less than 250 and a balance sheet total and turnover of no more than 43 million Euros and 50 million Euros. Meanwhile, large businesses correlate with organisations that are developed further than the boundaries of micro, small and medium-sized enterprises.

The Government of Indonesia categorises business size in consideration to the range of total assets and annual sales. This definition was registered in National Law No. 20/2008. Accordingly, the number of employees is not included when making the classification. Table 2.2 presents the classification of enterprise size.

Table 2.2 Enterprise classification (Source: Bank of Indonesia, 2009)

Enterprise size	**Total assets (exclude land and building) (£)**	**Sales per annum (£)**
Micro	< 3,300	< 20,000
Small	3,300 - 33,000	20,000 – 166,000
Medium	33,000 - 666,000	166,000 - 3,333,000
Big	> 666,000	>3,333,000

It can be seen in Table 2.2 that there are four groups of company classification, namely micro, small, medium and big enterprise: micro enterprises have total assets (exclude land and building) amounting to less than £3,300, with annual sales of less than £20,000; a small enterprise is considered to be one that gains annual sales of £2,000–£166,000, with total assets amounting to between £3,300 and 33,000; medium-sized enterprises are those that gain sales of between £166,000 and £3,333,000 annually, with asset value of between £33,000 and £666,000; finally, big enterprises are those with annual sales amounting to more than £3,333,333, with total assets equating to more than £666,000. In general, there are three subgroups available for classifying enterprises for statistic and operation purposes, namely micro small-to-medium, and big or multi-national enterprises.

Micro small-to-medium-sized enterprises (MSMEs) are calculated as the most common size enterprise in the world. Kushnir *et al*. (2010) note that at least 125 million are listed as registered MSMEs in at least 132 nations, whilst unregistered MSMEs are predicted as going

beyond this Figure. Figure 2.3 presents the density of MSMEs per 1,000 population across 132 different countries.

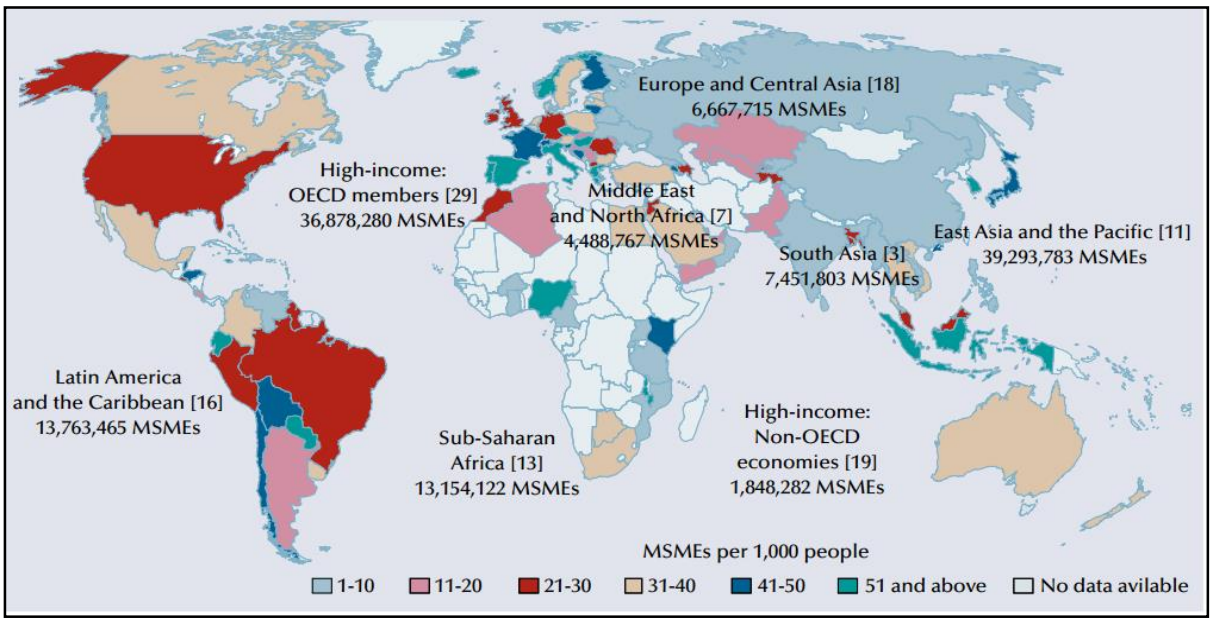

Figure 2.3 Density of MSME worldwide (Source: Kushnir *et al*., 2010).

There are at least 31 MSMEs for every 1,000 population (ibid). Indonesia is listed as the country with the second highest number of MSMEs, with 100 formal MSMEs for every 1,000 people, followed by Paraguay (95), The Czech Republic (85), Ecuador (84) and Brunei Darussalam (122), with the highest (ibid).

Small-to-medium-sized enterprises are the most dominant enterprises in the globe, with these companies contributing a significant role to economic growth in every nation (Kushnir *et al*., 2010; Villa, 2011; The Asia Foundation, 2014). There are 20.7 million SMEs, which generate 90 million employee roles in the European Union, with at least 13% out to 20 million SMEs considered exporter companies (Villa, 2011). Indonesia is listed as first rank in terms of SMEs when compared with five other ASEAN members, as presented in Table 2.3 (The Asia Foundation, 2014).

Table 2.3 SMEs total, workers, employment, and GDP among six ASEAN member (Source: The Asia Foundation, 2014)

SMEs part to: (%)	Indonesia	Thailand	Cambodia	Malaysia	Vietnam	Lao
Entire enterprises	99.9	99.7	99	97.3	97	95.7
Employment	97	84	88	59	85	83
GDP	58	37	76	32	39	N/A

In contrast, big corporations are not as numerous as MSMEs. Big enterprises are commonly known as multinational enterprises. Multinational enterprises drive their organisations and production site in different countries and continents. An enlarged marketplace and reduced production costs are the utmost goal for striving towards global competition so as to maintain sustainable business.

2.2.2 The Development of Small-to-medium-sized Business Cluster in Developed and Developing Countries

Profit organisations need to organise a grand design strategy, not only to compete but also to complete collaborations with other organisations so as to maintain a sustainable business (Porter, 2000). Furthermore, Porter (1990) proposes a cluster as a fit scheme to both facilitate cooperation and competing across the borderless market. A cluster theory has been developed and well-documented over many centuries (Ammerman, 2014). Porter (2000: 3) describes a cluster as follows:

'A cluster is a geographically proximate group of interconnected companies, specialized suppliers, service providers, enterprises in related industries and associated institutions (e.g., trade associations, universities, standard agencies) in a particular field, linked by commonalities and complementarities'.

Research in business clusters and industrial clusters has been further developed through a number of approaches, such as cluster evolution, knowledge transformation, networking, enterprise-size and country classification (Pietrzykowsky, 2014; Jurksiene & Pundziene, 2014;

Cosmano *et al*., 2014; Menzel & Fornahl, 2009). Cluster lifecycle is known to consist of four stages, including emerging, developing, sustaining and declining (Menzel & Fornahl, 2009). Cluster robustness is dependent on industrial and institutional dynamics (Boschma & Fornahl, 2011).

A cluster is initiated by both public creativities and government involvement in an effort to increase economic growth. Government support in clusters' stability is mostly chanced in developed nations, where government support, for example, is underlined as a key factor in establishing industrial clusters in Danish and Dutch (Olszewski & Pietrzykowski, 2014). Meanwhile, North America clusters are dominated by large enterprises and the high-tech industrial sector, with these clusters linking directly to small and medium enterprises (ibid). Italian clusters are initiated by enterprise owners' with strong local relationships (ibid). Lithuania and Poland, for example, have initiated the SME business clusters in line with EU programmes centred on strengthening their economic development (Pietrzykowsky, 2014; Jurksiene & Pundziene, 2014). However, the programmes are ineffective owing to various barriers in communication and delivering the programme to cluster members (ibid). In contrast, the effective transfer of knowledge amongst workers within a cluster is engaged through informal communication across workers in a wireless communication cluster in Denmark (Dahl & Pedersen, 2004).

Meanwhile, cluster establishment in low-income economy countries mostly originates through community initiatives, with less support shown by authority (Otsuka & Sonobe, 2011). Furthermore, an industrial cluster is generally launched after a number of enterprises are grouped and then improved, rather than the opposite (Feldman *et al*., 2005). The SME cluster institution in China, for example, was started by the obtainability of the indigenous marketplace and then progressed on to the expansion stage by equally developing the marketplace to the inner-city, as well as improving entrepreneur skills in making high-quality products (Sonobe *et al*., 2002).

Conventional manufacturing clusters that are built by geography proximity, such as fabric and apparel products, are the most common SME clusters in Asian Nations, such as Indonesia, Philippines and Thailand (Chaminade & Vang, 2008). Therefore, these traditional manufacturing-based SMEs struggle to meet customers' demands in terms of providing high-quality products that are required by international customers (ibid). Thus, government support, such as through the deliverance of tailored-made training and managerial training, is needed

not only to educate SME workers but also to back cluster existence in order to boost economic growth (ibid; Otsuka & Sonobe, 2011).

2.2.3 State-of-the-art Review of Enterprise Size and the SME Cluster Industry

It has been revealed that SMEs are the dominant group in terms of economic contributions and enterprise size worldwide. These enterprises are considered frontrunners in developing countries, such as Indonesia. Characteristically, a group of SMEs that produces the same goods are localised within geography closeness; therefore, such SMEs have initiated business and industrial clusters in an effort to embrace global market. However, cluster development, in its attempts to achieve both sustainable business and national-economic-contribution, has become stagnant. The connection between business size, SMEs and clusters with related references are depicted in Figure 2.4.

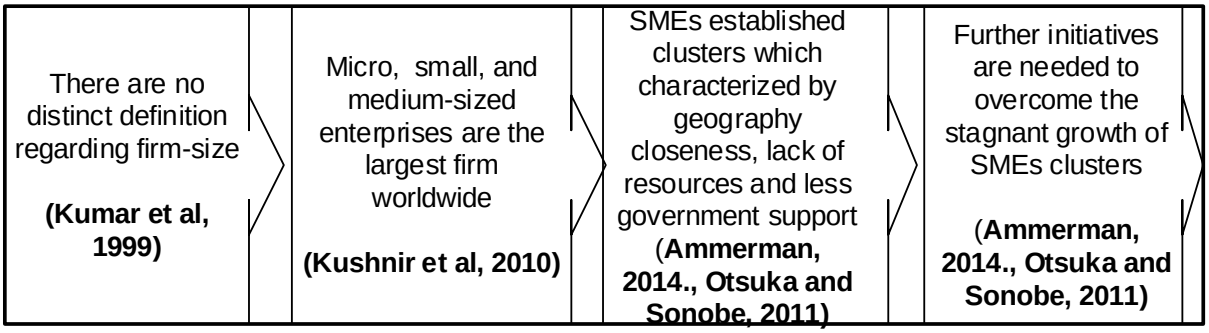

Figure 2.4 State-of-the-art references of business size, SMEs and cluster (Source: own illustration)

2.3 Sustainable Development and the Triple Bottom Line Sustainability

Sustainability is embedded from the term 'sustainable development'. Exploring sustainable development in accordance with the United Nation agenda has been developed by individuals and organisations worldwide. Attaining sustainable development agenda requires broader perspectives, including ecological economy, political ecology and freedom-oriented development in order to accomplish well-being, fairness and ecological veracity (Sneddon *et al*., 2006). Seuring (2004b) states that '*sustainable development is widely accepted as a guiding principle in business but it needs to be transformed into business practices*'.

2.3.1 What is Sustainable Development?

The words 'sustainable development' were unveiled by The United Nation World Commission on Environment and Development in 1987 (UN DESA, 1999), which published a report entitled 'Our Common Future' with concern surrounding the uninterrupted decline of the human environment and unrenewable resources (ibid). The report, also well-known as the Brundtland Report, describes sustainable development as:

'Meeting the needs of the present without compromising the ability of future generations to meet their own needs' (ibid).

Two key concepts are presented:

- The idea of 'needs', specifically the crucial needs of the world's poor, to which prevailing precedence must be given.
- The idea of boundaries enacted by the state technology and social organisation on the environment's ability to meet existing and future needs (ibid).

These terms have been presented at very high-level conferences and papers in order to establish a method for achieving continuous improvement when implementing sustainable development agenda. In the early stages of the continued growth concept, sustainable paradigm denote to ecological sustainability; however, Lele (1991) argues that the meaning of development and environment are contradictions, with the author reflecting that sustainable development paradigms need to be developed further than ecological (Ibid). Critical thinking in developing a new paradigm is drawn from the substance of sustainable development in Figure 2.5 (ibid, p. 2).

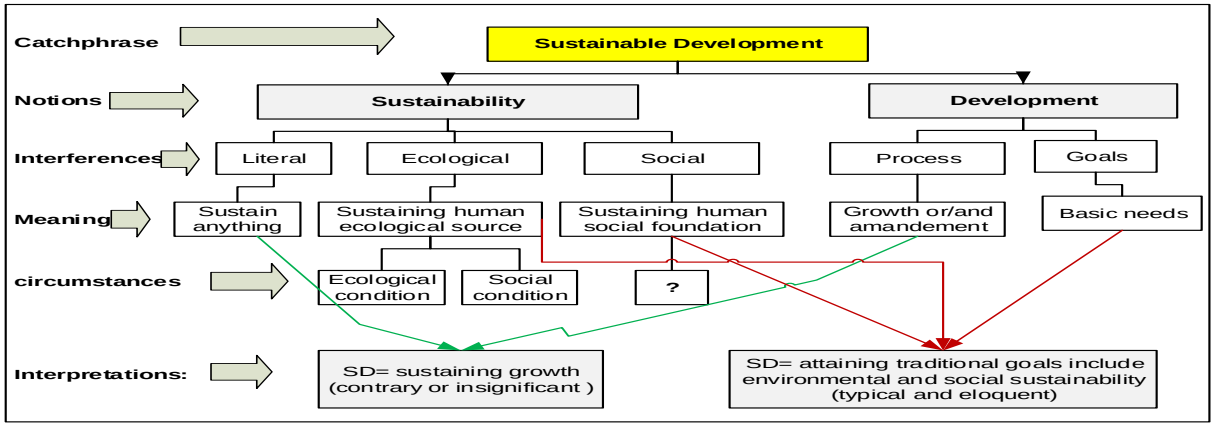

Figure 2.5 The substance of sustainable development (Source: Lele, 1991, p. 2)

As can be seen in Figure 2.5, the two terms, namely sustainability and development, are paralleled to sustainable development. Sustainability adopts three different perspectives, including literal, ecological and social. Concepts of development refer to process and goals. Sustainability infers sustaining everything. Further approaches to the term 'sustainability' include sustaining the ecological and social foundation of human life. Whilst sustaining the social basis of human basis requires further exploration, environmental and social circumstances, on the other hand, are stated as sustaining the ecological basis of human life. Two versions are inferred, either sustainable development as referring to sustaining growth and/or change, which is contrary, or sustainable development as a way of achieving fundamental goals, and environmental and social sustainability, which is mainstream. Lele (1991) determines that analysing sustainability not only focuses on economic growth to reduce environmental deprivation and poverty exclusion, but also recognises sustainability in multiple dimensions in the endeavour to improve principles, criteria and the measurements of such (ibid). Urgency has spread concerning sustainable development practices, spanning from developed nations to developing countries, with all regions needing to acquire actual sustainability practice (Redclift, 1992).

Two decades after the sustainable development agenda was initiated, however, unsustainably non-developmental exploits have been shown by many individuals, corporations and nations (Luke, 2005). Adverse effects of globalisation have been seen to result in sustainable development practice merely for publication purposes (ibid). Whilst the UN has committed to creating a second phase of sustainable development goals in line with the millennium development goal agenda, Griggs *et al*. (2013) propose the redefinition of sustainable development as follows:

'Development the meets the needs of the present while safeguarding earth's life-support system, on which the welfare of current and future generation depends'.

2.3.2 Why Sustainable Development is Important to the Indonesian Textile and Apparel Industry?

Sustainable development requires vigorous practice in order to accomplish the sustainable development agenda. Moreover, the sustainable development agenda includes facilitating people to be more conscious and improve their eminence of life whilst protecting and

enhancing the Earth's life support systems as the ultimate goal of sustainable development (The United Nation, 2012). In addition, sustainability action is highly dependent on the awareness of people, authority and organisations in implementing a sustainable development agenda from theory through to practice.

Textile and apparel products are listed as the first primary commodity in terms of non-oil exports, which have contributed 1.8% to the total market worldwide (Indonesian Ministry of Industry, 2014). The Government of Indonesia has established the roadmap of textile and apparel industry in an effort to improve their proficiencies to compete with other exporters from developing countries (ibid). In addition, Kushnir *et al*. (2010) listed Indonesia as the second largest country after Brunei Darussalam in terms of its density of MSMEs amongst every 1,000 population. Furthermore, Indonesian SMEs are listed as the highest in number in compares with big enterprises (ibid). In consequence, batik textile and apparel small-to-medium enterprises are considered to be majority enterprises, which employ over ten million workers.

The textile and apparel industry is known to induce two potential sustainability impacts, namely environmental and social sustainability. The first occurs in the textile industry whilst the latter occurs in the apparel industry. Overall, the production process in batik textile and apparel SMEs include dyeing the fabric and cutting, making, trimming. Indonesian SMEs are the same as any other SMEs in developing countries; in nature, these enterprises have limitations in terms of providing human and natural resources. Meanwhile, customer consciousness in regard to environmental and social sustainability issues in this industry are considered to be major triggers for textile and apparel suppliers from developing nations, such as Indonesia, in conducting responsible business. Practicing sustainability, which is embedded in terms of a sustainable business in the Indonesian textile and apparel industry, is a necessity when seeking to compete in the global market.

2.3.3 Measuring Sustainability

Nowadays, individuals, organisations and the government sector have developed their own concepts and methods in order to organise sustainability practices in their daily lives. However, corporate organisations and the government sector require high pressure in adopting sustainability as opposed to other organisations. Non-governmental organisations and

individuals have a significant portion to force profit organisation in adopting a sustainability business. Environmental management was the first priority to be embraced by the Brundtland Report. The challenge in sustainability practice has been amplified not only in regard to environmental traits but also with awareness of human and societal aspects as key drivers in succeeding sustainability agenda.

Amongst numerous theories, methods and debates to boost the suitable system to achieve sustainable development, Elkington (1994, 2004) recommends social, environmental and economic sustainability, and this is the entitled triple bottom line sustainability (TBL) concept, which has been broadly accepted by individuals, organisations and government sectors. In order to be sustainable, a business needs to consider people, the planet and profit as limited cradles in an effort to provide goods and services (ibid). The economic part of triple bottom line is related to society uses, people and unrenewable resources in the pursuit of prosperity (ibid). In addition, planet sustainability is generally interpreted as people's consciousness in the negative effect of earth deprivation, caused by pollution, climate change and the reduction of unrenewable sources (ibid). Social sustainability is highly referred to as corporate social responsibility (CSR), such as poverty reduction, and the improvement of working and living conditions in society (Dyllick & Hockerts, 2002). Three pillars are universally inter-linked, as presented in Figure 2.6.

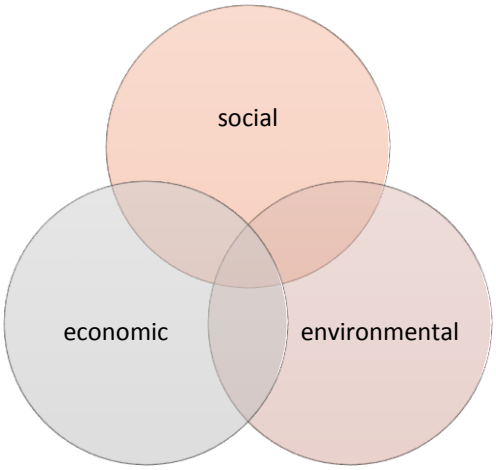

Figure 2.6 Triple bottom line sustainability (Source: adapted from Elkington, 1994).

Triple bottom line is principally accounting contexts by integrating social, environmental and economic dimensions (Slaper & Hall, 2011). Consequently, the essence of the TBL is signified as measuring rather than defining (ibid). In line with the TBL as a measurement tool of planet,

profit and people dimensions, Slaper & Hall (2011: 1) determine that the fit definition of the TBL is that proposed by Savitz (2006) as follows:

'Captures the essence of sustainability by measuring the impact of an organisation's activities on the world…including both its profitability and shareholder values and its social, human, and environmental capital'.

Whilst the three pillars are employed so as to provide goods and services, nowadays, the challenge for business is centred on establishing resolution in order to be able to prevent all of the scarce resources in providing society with goods and services. A business is known as 'sustainable' if, in each production stage, it traces and informs about triple bottom line aspects, and accordingly gains positive impact on both corporate and society (Savitz & Weber, 2013). A successful sustainable business is beyond numerical value in line with that reported and published on mainstream media (ibid).

There are a number of tools in evaluating sustainability, such as ISO 14001, which is focused on environmental; SA88000, AA1000 framework and ISO 26000 are focused on social sustainability. The Global Report Initiatives (GRI) is acknowledged as comprehensive guidelines in measuring and reporting sustainability, whilst the GRI tools are accepted worldwide (Lozano & Huisingh, 2011). This organisation collaborates with United the Nation Environment Programme (UNEP) to disseminate and deliver procedures for organisations and government sectors that are interested in assessing economic, social and sustainability on a voluntarily basis. The GRI established G4 as a guideline in assessing profit, planet and people sustainability, as depicted in Figure 2.7.

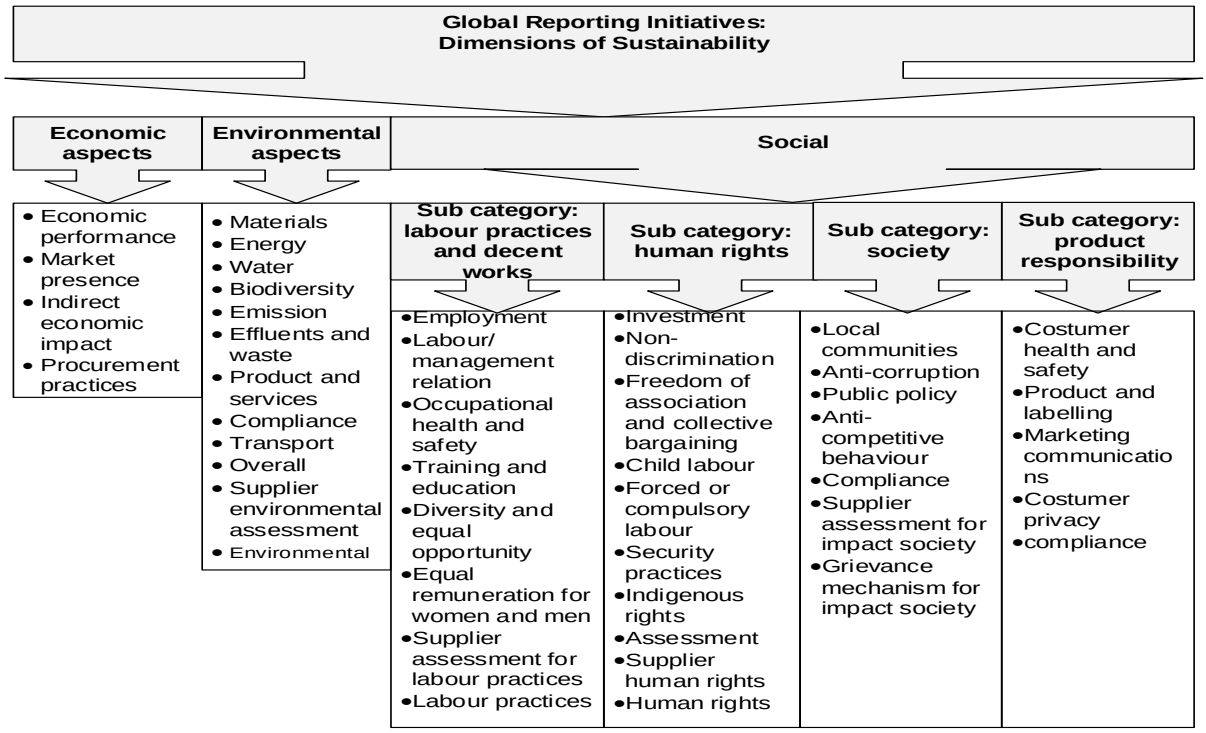

Figure 2.7 The Global Report Initiative G4 sustainability guidelines (Source: GRI, 2014:9)

It can be seen in Table 2.4.that at least four sub-categories—namely labour practices, human rights, and society and product responsibility—are underlined as social dimensions whilst environmental and economic aspects are embedded within each category. It can be concluded that the dimension of social sustainability is expanded from labour conditions to customer satisfaction. Social aspects in assessing sustainability not only merely depend on working conditions but also concern societal responsibility. Business organisations are pinpointed as those organisations that are both highly conscious and adopt triple bottom line sustainability.

2.3.4 Triple Bottom Line Sustainability in the Textile and Apparel Industry

Textile and apparel corporations from developed nations are recognised as pioneers in adopting triple bottom line sustainability (Allwood *et al*., 2006) The developments of textile and apparel industries have shifted from developed nations to developing countries due to low production costs in less developed nations (ibid). Furthermore, the industrialisation era of textiles and apparel in the United Kingdom have decreased in line with the reduction of the Marks and Spencer (M&S) Corporation's purchase in textile and apparel manufactures in the UK in the

1990s (ibid). Moreover, M&S relocated their textile and apparel supplier to Asian countries, mainly Indonesia, India and Sri Lanka (ibid).

Since textile and apparel production sites have moved from developed nations to low-income economy nations and lesser developing countries, textile and apparel customers that majority reside in developed nations are therefore highly concerned with the insufficiency of sustainable business practices that occur amongst textile and apparel suppliers.

2.3.4.1 Sustainability Issues in Textile and Apparel Enterprises in Developing Countries

Sweatshop working conditions have been highlighted as long-lasting issues in textile and apparel enterprises in developing countries. Indonesian textile, apparel and footwear companies are one of the main suppliers for Nike Corporation, and were criticised in sweatshop and child-labour condemnations in the 1980s and 1990s (Emmelhainz & Adam, 1999; Harrison & Scorse, 2004). Furthermore, anti-sweatshop campaigns in Indonesian forced the government to increase local minimum wages by 150% during 1990–1996, as well as implement working condition improvements (Harrison & Scorse, 2004).

In spite of the effective programme of the anti-sweatshop campaign, however, apparel workers in lesser developed nations remain at risk, not only in sweatshop working conditions but also in terms of unpaid wages due to factories closing down (Kumar & Mahoney, 2014). Moreover, apparel workers in Indonesia and Honduras challenged an extensive negotiation claiming their wages due to companies closures (ibid). Apparels workers in Guatemala have been working in sweatshop working conditions, and testified that apparel working conditions and wages are superior amongst other alternatives (Clark & Powell, 2013). The China textile and apparel industry, as the largest textile and apparel suppliers worldwide, received criticism concerning unfair labour wages in 2006 (Chan & Siu, 2010). However, labour-wage policy reforms in China affected in rearranging apparel production sites from China to other Asian countries, such as Bangladesh, Vietnam, Cambodia and Indonesia, due to labour costs in those countries being lower than in China (Kumar & Mahoney, 2014).

It is argued that adopting a sweatshop labour policy in accordance with wealth-nations standard is unsuitable for implementation in developing countries due to workers in such nations being

less productive than workers in developed nations (Skarbek *et al*., 2012). Whilst Indonesian workers, international sportswear brands and outsourcing factories developed protocols in implementing anti-sweatshop working conditions (Gardener, 2012), in contrast, a number of Indonesian textile and apparel factories closed, which impacted those who were unemployed due to the local minimum wage sharply increasing by 40% in Jakarta and national minimum wage increasing by 30% on average in 2013 (Duniaindustri, 2014; Industry.bisnis, 2013; Ministry of Industry, 2014). Labour expenses encompass the second utmost expenditure after raw material costs in the budget structure of the Indonesian textile and apparel industries (Kuncoro, 2013). At least 60 apparel exporter companies relocated from Jakarta to Central Java Province in 2013 due to wage efficiency considerations (liputan6, 2013).

Anti-sweatshop campaign effectiveness in Indonesian sportswear apparels raises two consequences: on the one hand, this campaign is beneficial for Indonesian workers in terms of labour wages and working condition improvements, but on the other hand, however, the extraordinary labour costs in Indonesia have increased significantly since the 1990s, which has had a negative impact on foreign capital investment (Harrison & Scorse, 2010). Indonesia was the second largest Nike Incorporation supplier for at least two decades; nowadays, however, Vietnam has replaced Indonesia as the second largest Nike vendor due to lower-production costs and higher productivity in comparison with Indonesia (ibid). In addition, eight-floor apparel factories collapsed in Bangladesh in May 2013, which provides further evidence of the desecration of workers' working conditions in apparel-outsourcing, as well as the poor working conditions that urge new consensus in setting up anti-sweatshop campaigns by companies, suppliers, governments and NGOs (Kumar & Mahoney, 2014).

In spite of the circumstances of the textile and apparel business climate, including uncertainty and high competition, the textile and apparel producers from less developed nations, however, demand the adoption of social and environmental practices in order to respond to global awareness in the good practices of sustainability production (Abreu *et al*., 2012). China and Brazil are the two leading textile exporters known to have adopted social responsibility practices due to pressure from society and the government (ibid). Turkish woven-fabric manufacturing has been implemented in regard to environmental waste management practice in response to high pressure in environmentally sound production practice (Alkaya &Demirer, 2014).

2.3.4.2 Sustainability Assessment for Textile and Apparel Suppliers in Developing Countries

In response to global concerns in adopting triple bottom line sustainability practices in the textile and apparel industry, numerous organisations and international textile and apparel brands have developed tools in assessing sustainability practices; however, there is neither single agreement nor standardisation accepted in measuring sustainability practice in the textile and apparel industry (Dickson *et al.*, 2012). The Marks and Spencer Corporation, which is known as one of the international prominent apparel brands, initiated a programme called 'Plan A', providing sustainability guidelines and practices throughout the global supply network (Grayson, 2011). M&S have also initiated a supplier assessment standard, namely Global Sourcing Principles, as a Codes of Conduct that must be complied by enterprises' suppliers, encompassing six main points, including supplier responsibility, work place rights, production site and labelling, regular assessment, environmental responsibility and commitment to extending those five principles throughout the supply chain (M&S, 2013).

Non-Governmental Organisations (NGOs), namely Worldwide Responsible Apparel, initiated a codes of conduct centred on assessing social and environmental management practices in textile and apparel enterprises, with consideration to the social domain, such as through environmental and social indicators developed by major prominent apparel brands' representatives (O'Rourke, 2003). In addition, textile and apparel scholars have initiated sustainability responsible business models for application in the textile and apparel industry, including sustainability indicators, as presented in Figure 2.8 (Dickson & Eckman, 2006).

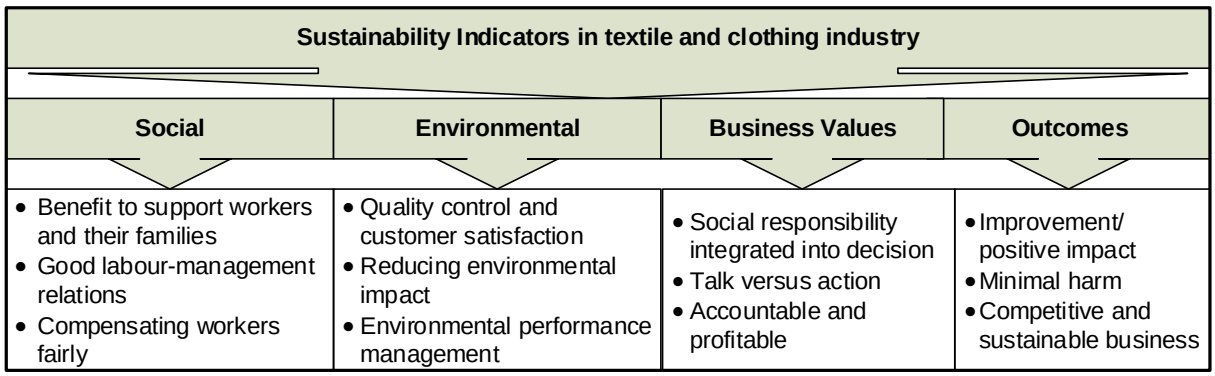

Figure 2.8 Sustainability indicators developed by textile and apparel scholars (Source: Dickson & Eckman, 2006)

Recognised as one of the most global industries, however, it disclosed that stakeholders' participation is needed in establishing triple bottom line sustainability indicators throughout the textile and apparel supply networks (Dickson *et al*., 2012).

2.3.5 State-of-the-art Review of Sustainable Development, Triple Bottom Line Sustainability and Sustainability Indicators in Textile and Apparel Industry

The evolutions of sustainable development to triple bottom line sustainability have been developed by numerous scholars. Sustainability in business practice is not only concerned with defining but also measuring triple bottom line sustainability with the use of sustainability indicators (Slaper & Hall, 2011). It is argued that there is neither consensus nor compulsion in adopting sustainability practices (Lozano & Huisingh, 2011). The textile and apparel industry is considered to be an industry under pressure in adopting better social and environmental sustainability practice due to numerous cases in sweatshop working conditions and unethical waste management in production site in less developed regions. The correlation between sustainable development, triple bottom line sustainability and sustainability indicators in the textile and apparel industry by related references is depicted in Figure 2.9.

Figure 2.9 State-of-the-art review of sustainable development and triple bottom line sustainability indicators in textile and apparel industry.

As per those success stories in regard to anti-sweatshop campaigns and the data gathered from apparel and textile supplier big enterprises, in contrast, it may be seen that there is inadequate data gathered from textile and apparel supplier SMEs in terms of sustainability practices and the positive effect of anti-sweatshop campaign. In actual fact, SMEs are recognised as the most common type of enterprise worldwide (Kushnir *et al*., 2010), with several developing countries, including Indonesia, Czech Republic, Paraguay and Ecuador, listed as having the largest density of SMEs (ibid).

2.4 Supply Network

The terms ‘supply network’ and ‘supply chain’ are defined in different ways by different authors. This section provides an overview of key literature related to these terms and concludes with the definitions that were used in this research. The phrase ‘network of enterprises’ is correlated to a vast range of inter-organisational associations (Nassimbeni, 1998). In regard to global market competitiveness, most enterprises are challenged by market density; in consequence, these private enterprises need to develop a better system to certify that customers are pleased with both acceptable price and satisfactory service (ibid). In addition, profit organisation is required to deal with vast inter-organisational relationships from suppliers to end consumers (ibid).

Supply network coverage includes both downstream as logistics phases and the upstream related to production flow (Harland, 1996). The evolution of the supply network definition in the context of business organisations from a number of scholars is presented in Table 2.4.

Table 2.4 Supply network definition (Source: related references)

Researchers	Supply Network definition
Lamming *et al*. (2000)	Interconnection among group of networks to transform raw materials into goods and deliver it to end-customers
Harland and Knight (2001)	Collaboration among entities, assets and activities within production stages to deliver goods and services
Choi and Hong (2002)	A web of enterprises involved throughout production stages to deliver products and/or services
Harland *et al*. (2004)	Interconnecting of entities among inter-organisations to deliver goods and services.
Choi and Krause (2006)	Group of connected enterprises that are involved to deliver end product
Braziotis *et al*. (2013)	Cooperation, collaboration, and coordination among members of network as well as it involves clash and opposition too

Building on the definitions in Table 2.4, key characteristics of supply networks are:

- a number of customers and suppliers that work in partnership to deliver goods and services; and
- Collaboration among industrial stakeholders in order to deliver business practice that not only economically profitable but also socially and environmentally sustainable.

Key distinctions between supply chains and supply networks highlighted by Braziotis et al (2013) are presented in Table 2.5.

Table 2.5. Differences between supply chain and supply network. (Source: Braziotis et al, 2013: 649)

Dimensions	Supply Chain	Supply Network
Main concept	Products and serviced	Relationships
Configuration	Linear and ongoing, relatively stable structure due to established power attributes	Non-linear and dynamic structure
Density	Low	High
Operations	Predictable and stable	Unpredictable
Coordination	Organisation focus on direction of supply chains' flow and on integration	Organisation focus on the harmonisation of the network of inter-firm relationships
Integration	Organized	temporary and unintentional
Means to improve effectiveness	Cooperation, collaboration, and coordination among Supply Chain members involving competition between these members in some occasions	Cooperation, collaboration, and coordination among members of a network of Supply Chains. At the same time, it involves conflict and competition too

For the purpose of this research, a supply chain is considered to be a series of activities and organizations that deliver goods and services to end customers whereas a supply network refers to the web of organizations and relationships involved in providing goods and services to customers.

In addition, differences between supply chain and supply networks is visualized in Figure 2.10.

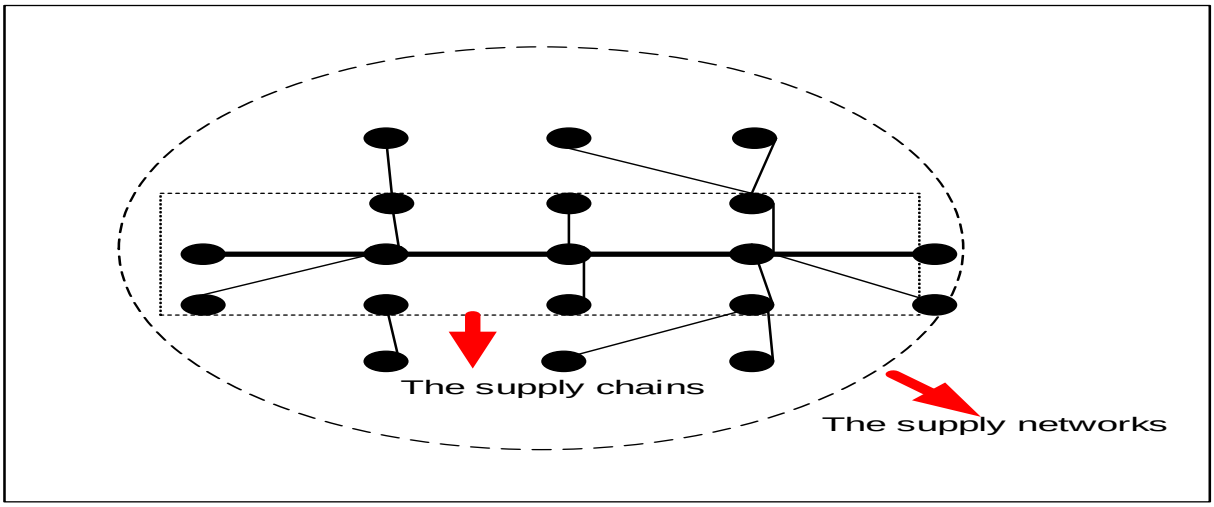

Figure 2.10 Visualisation of distinguish between supply chains and supply network (Source: Braziotis *et al*., 2013: 649)

As shown in Figure 2.10, supply networks are drawn at the outer of the supply chain flow. In spite of the differences between supply chains and supply network, as is shown in Table 2.5, when reviewing the supply chains concept, it can be seen as commonly integrated to the supply network (Van Bommel, 2011).

2.5 Global Supply Network in the Textile and Apparel Industry

The textile and apparel industry is recognised as a comprehensive example in capturing supply network (Gereffi & Frederick, 2010; Van Bommel, 2011). In addition, the textile and apparel industry is considered the most global industry worldwide (Gereffi & Frederick, 2010). The recent trend in global economy shows that the majority of well-established supply networks of profit organisation consist of a number of organisations from different nations.

Textile production processes require high technology, whereas apparel production, on the other hand, is a labour-intensive job. Apparel suppliers are classified into three categories, namely apparel assembly, original equipment manufacturing and original design manufacturing. The supplier's role and responsibilities in each classification is depicted in Table 2.6.

Table 2.6 Upgrading apparel value chain (Source: Gereffi & Memedovic, 2003)

Suppliers' type	Suppliers' roles	Governance arrangement	Country
Cut-make-trim (CMT)	Apparel assembly, fabric and design are provided by customers	Marginal suppliers: suppliers only receive production fees. Suppliers are totally controllers by customers.	Cambodia, Vietnam, SSA, Caribbean
Original Equipment Manufacturing (EOM)	The suppliers provide all of process of production stages and shipment, exclude design.	Preferred and niche supplier	Indonesia Bangladesh, Sri Lanka, Mexico,
Original Design Manufacturing (ODM)	The suppliers involve from design to distribution process	Strategic suppliers	Turkey, The EU, India, China

As shown in Table 2.6, Indonesian apparel suppliers are considered Original Equipment Manufacturing contractor, meaning the apparel manufactures have responsibility of providing fabrics, apparel production stages and logistic, as required by the customer. Furthermore, the apparel industry is customer-driven, meaning customers have key roles in choosing their suppliers in a range of different nations (Gereffi & Frederick, 2010). Brand manufacturers, retailers and brand marketers are entitled as lead enterprises on the apparel value chain (ibid). There are two types of degree of focal company influence within the supply network, namely low degree of power and high degree of power (Harland *et al*., 2004).

2.5.1 Supply Network Structure

The operational structure amongst members of the supply network can diverge vastly determined by practices, policies and common of interest (Choi & Hong, 2002). Moreover,

analysing the structure and relationships of a supply network is essential in terms of gaining value-added sustainable competitiveness (Kim *et al*., 2011). Three supply networks include formalisation, centralisation and complexity, which reveal supply network structure (Choi & Hong, 2002). Mapping formalisation, centralisation and complexity of supply network structure is essential to reveal the lack of interdependencies between different tiers in the supply network (Choi & Hong, 2002). Table 2.7 represents three dimensions of the supply network structure in terms of meaning and implication (ibid).

Table 2.7 Configuring Supply network structure (Source: Choi & Hong, 2002)

Supply network structure	**Meaning**	**Implication**
Formalisation	Rights and obligations amongst enterprises member within supply network	1. Dyadic level 2. Large supply-based
Centralization	Degree authority as decision maker within the supply network	1. Centralisation 2. Decentralisation
Complexity	Structural variety that exist in supply network	1. Vertical complexity 2. Horizontal complexity 3. Spatial complexity

As seen in Table 2.7, formalisation means the rights and obligations that are clearly written and measured in each enterprise of the supply network. In consequence, the norm, rules and controlled only exist at an enterprise to enterprise level, whilst large supply-based enterprises depend on focal companies within a supply network. Centralisation refers to the degree of power or authority as the decision maker over the suppliers in the network. Furthermore, a centralised supply network refers to a decision being made by final assemblers, whilst a decentralised supply network refers to the decision needing to be made autonomously by an individual supplier. Complexity refers to the structural variety that exists in the supply network. Vertical complexity denotes the total dissimilar units in the similar level, whilst horizontal complexity considers the number of levels in the system, and spatial complexity represents the number of enterprises operating on a worldwide scale.

Researches examining the supply network structure have been developed by scholars in order to visualise the supply network and how it behaves (Choi & Hong, 2002; Kim *et al*., 2011; Bellamy & Basole, 2013; MacCarthy & Jayarathne, 2013). Case-based studies utilising interview tools and exploratory research methods have been selected as majority research approaches in examining supply network; however, real life case studies in revealing supply network from profit organisations are inadequate in number, not only due to the fact that conducting case studies means allocating a necessary time span but also the restricted right of entry to conduct the study in profit organisations (Choi & Hong, 2002; Kim *et al*., 2011; Van Bommel, 2011; MacCarthy & Jayarathne, 2013).

2.5.2 State-of-the-art Review Supply Network

It is argued that qualitative elucidation, as distinctive result of case-based studies in structuring supply networks, requires further validation in order to conceptualise the complex phenomena of the supply network (Kim *et al*., 2011). In addition, most studies on supply network structures have not clearly covered the roles of SMEs in textile and apparel supply networks. In fact, textile and apparel SMEs make up the majority of suppliers in the textile and apparel industry worldwide (MacCarthy & Jayarathne, 2011, 2013). The state-of-the-art literature in supply network is presented in Figure 2.11.

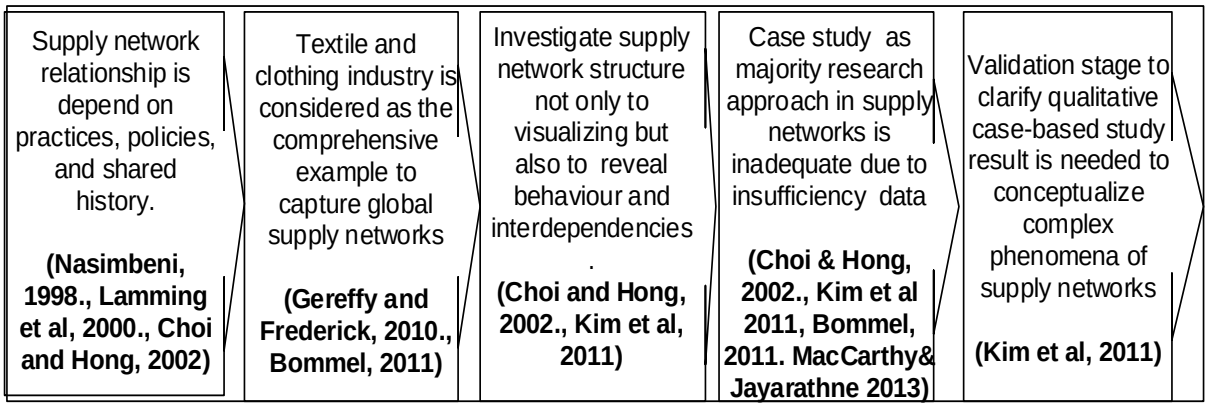

Figure 2.11 State-of-the-art literature of supply network (Source: related-references)

As a supply network comprises environmental and human activities, and information flow and resource consumption, linking sustainability to supply network is needed not only to focus on production efficiency but also to counter global community awareness in emerging sustainability required to textile and apparel suppliers in developing nations.

2.6 The Development of Sustainable Supply Chain Management to Sustainable Supple Networks Operation: Evidence from Triple Bottom Line Sustainability and Supply Chain Management

The production and manufacturing process creates two things, namely end goods and waste. Whilst end goods are offered to customers at a competitive price, on the contrary, waste can decay a company's reputation. In addition, managing human and natural resources alongside a supply chain is necessary in order to achieve efficiency. Research in investigating sustainable supply chain management, as published in periodicals, has been undergoing development for at least two decades (Pagel & Shevchenco, 2013). The common heading within this research includes sustainability supply chain, sustainability supply management and sustainability supply chain management (Seuring & Muller, 2008; Pagel & Shevchenco, 2013). In line with supply network theory and amongst diversity definitions regarding triple bottom line sustainable supply chain management, Seuring & Muller (2008) define sustainable supply chain management as:

'*The management of material, information, and capital flows as well as cooperation among companies along the supply chain while taking goals from environmental, social, ad economic sustainability into account which are derived from customer and stakeholders requirement'.*

Scientific research published in periodicals since the first title of sustainable supply chain management was initiated more than twenty years ago (Pagel & Shevchenco, 2013), and discloses that environmental sustainability approaches linking to supply chain management is the majority topic, followed by economic and social sustainability, as presented in Figure 2.12 (Ashby *et al*., 2012).

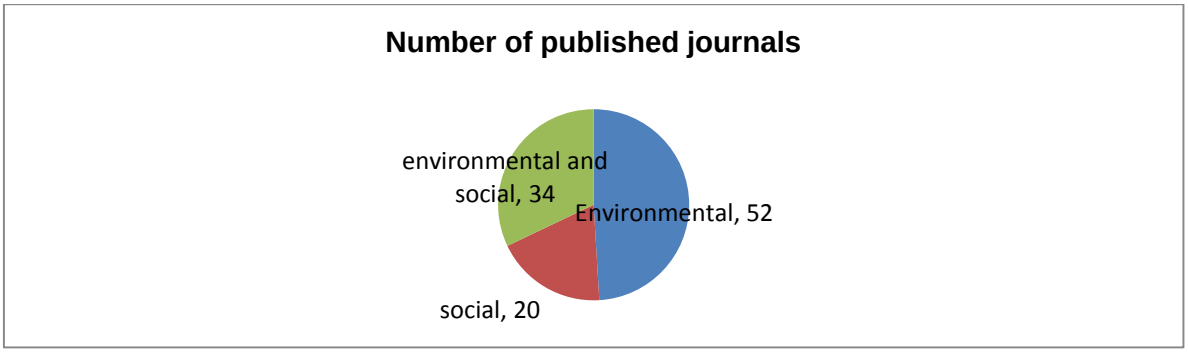

Figure 2.12 Number of literature that specify triple bottom line sustainable supply chain management (Source: Ashby *et al*., 2012:502).

As shown in Figure 2.7, the research is focused on environmental sustainability, with the majority approaches compared with social and economic sustainability. In addition, the environmental sustainability approach is intensely drawn as opposed to social sustainability, which were founded in periodicals that purposely review both social and environmental sustainable supply chain management (Ashby *et al*., 2012).

2.6.1 Sustainable Supply Chain Management in Textile and Apparel Industry

Unlike the mining and petroleum industry, supply chains have gained vast public concern in adopting triple bottom line sustainability owing to the enormous impact of natural resource depletion, warranting research in investigating sustainable supply chain management in the textile and apparel industry. Such research is in its early stages—despite the significant contribution of the industry in terms of the economy and employment worldwide (Gereffi & Frederick, 2011). The World Trade Organisation (WTO) published data in regard to leading exporters and importers of textile and apparel worldwide, as is presented in Table 2.8.

Table 2.8 Leading exporter and importer Countries of textile, 2012 (Source, WTO, 2013)

Textile Exporters						
No	**Country**	**Value (US$ Billion)**	**Share in world export (percentage)**			
			1980	**1990**	**2000**	**2012**
1	China	95	4.6	6.9	10.4	33.4
2	European Union (27)	69	-	-	36.6	24.3
3	India	15	2.4	2.1	3.6	5.3
4	United States	13	6.8	4.8	7.1	4.7
5	Republic of Korea	12	4.0	5.8	8.2	4.2
6	Turkey	11	0.6	1.4	2.4	3.9
7	Hong Kong	11	-	-	-	-
8	Taiwan	10	3.2	5.9	7.7	3.6
9	Pakistan	9	1.6	2.6	2.9	3.0
10	Japan	8	9.3	5.6	4.5	2.7
11	Indonesia	5	0.1	1.2	2.3	1.6
12	Vietnam	4	-	-	0.2	1.4
13	Thailand	4	0.6	0.9	1.3	1.2
14	Mexico	2	0.2	0.7	1.7	0.8
15	United Arab Emirates	2	0.1	-	0.8	0.8

Textile Importers						
	Country	**Value (US$ Billion)**	**Share in world import (percentage)**			
			1980	**1990**	**2000**	**2012**
1	European Union (27)	74	-	-	35.1	24.5
2	United states	26	4.5	6.2	9.8	8.6
3	China	20	1.9	4.9	7.8	6.6
4	Hong Kong	10	-	-	-	-
5	Vietnam	9	-	-	0.8	3.0
6	Japan	9	3.0	3.8	3.0	3.0
7	Turkey	6	0.1	0.5	1.3	2.1
8	Mexico	6	0.2	0.9	3.2	2.0
9	Bangladesh	6	0.1	0.4	0.8	1.9
10	Indonesia	6	0.4	0.7	0.8	1.8
11	Republic of Korea	5	0.7	1.8	2.1	1.6
12	Russian Federation	5	-	-	0.4	1.5
13	Canada	5	2.3	2.2	2.5	1.5
14	Brazil	4	0.1	0.2	0.6	1.4
15	India	3	0.1	0.2	0.4	1.1

As shown in Table 2.8, seven developed regions are listed as leading textile exporters, namely the EU, the US, Japan, Taiwan, Republic of Korea and the UAE, in addition to six high-income economy countries, which are listed as leading importers. The majority of exporter and importer countries reside in Asia. Textiles contribute US$287.00 trillion in global sales, with a share of 1.6% in the economy's merchandise export (WTO, 2013). In addition, the apparel export subsidise US$423.00 trillion, in addition to 2.4% shared in the world's economy (ibid). Table 2.9 presents the leading apparel exporters and importers of 2012.

Table 2.9 leading exporters in importers of apparel worldwide, 2012 (Source: WTO, 2013)

Apparel Exporters						
No	**Country**	**Value (US$ Billion)**	**Share in world export (percentage)**			
			1980	**1990**	**2000**	**2012**
1	China	160	4.0	8.9	18.2	37.8
2	European Union (27)	109	-	-	28.4	25.8
3	Hong Kong	23	-	-	-	-
4	Bangladesh	20	-	0.6	2.6	4.7
5	Turkey	14	0.3	3.1	3.3	3.4
6	Vietnam	14	-	-	0.9	3.3
7	India	14	2.0	2.0	3.0	3.3
8	Indonesia	8	0.5	1.5	2.4	1.8
9	United States	6	3.1	2.4	4.4	1.3
10	Malaysia	5	0.4	1.2	1.1	1.1

11	Mexico	4	-	0.5	4.4	1.3
12	Cambodia	4	-	-	0.5	1.0
13	Thailand	4	0.7	2.6	1.9	1.0
14	Pakistan	4	0.3	0.9	1.1	1.0
15	Sri Lanka	4	0.3	0.6	1.4	0.9
Apparel Importers						
	Country	**Value (US$ Billion)**	**Share in world import (percentage)**			
			1980	**1990**	**2000**	**2012**
1	European Union (27)	170	-	-	41.1	38.5
2	United States	88	16.4	24.0	33.0	19.9
3	Japan	34	3.6	7.8	9.7	7.7
4	Hong Kong	16	-	-	-	-
5	Canada	9	1.7	2.1	1.8	2.1
6	Russian federation	9	-	-	0.1	2.1
7	Republic of Korea	6	0.0	0.1	0.6	1.4
8	Australia	6	0.8	0.6	0.9	1.4
9	Switzerland	6	3.4	3.1	1.6	1.3
10	China	5	0.1	0.0	0.6	1.0
11	United Arab Emirates	4	0.6	0.5	0.4	0.8
12	Saudi Arabia	3	1.6	0.7	0.4	0.8
13	Mexico	3	0.3	0.5	1.8	0.7
14	Chile	3	0.2	0.0	0.2	0.6
15	Turkey	3	0.0	0.0	0.1	0.6

It shown in Table 2.9, ten of the leading apparel importers come from high-income economy countries, whilst apparel suppliers, excluding the EU 27 and the US, reside in low-income economy countries.

2.6.1.1 Environmental Sustainable Supply Chain Management in the Textile and Apparel Industry

The instigate research, in terms of sustainable supply chain management, has begun by examining the environmental sustainable supply chain management in the 1990s (Pagel & Sevchenko, 2013). It has demonstrated through a number of journals in environmental sustainable supply chain that this is the highest when compared with the other two bottom lines of sustainability (Ashby *et al*., 2012). Three categorisations, namely proactive, reactive and value-seeking, were outlined as environmental supply chain management approaches (Van Hoek, 1999, in Ashby *et al*., 2012). Proactive is related to preventing action prior production process by recycling and reusing materials alongside supply chains; reactive means adjusting

pollution using a waste management system, whilst value-seeking refers to environmental responsibility governed by a focal enterprise within a supply network (ibid).

Textile products are frequently linked to environmental impact, with the production process characterised by the use of both natural resources and chemical stuffs (Lakhal *et al*., 2008). The risk of environmental impact caused by textile and apparel production flow is presented in Figure 2.13 (Nguyen *et al*., 2014).

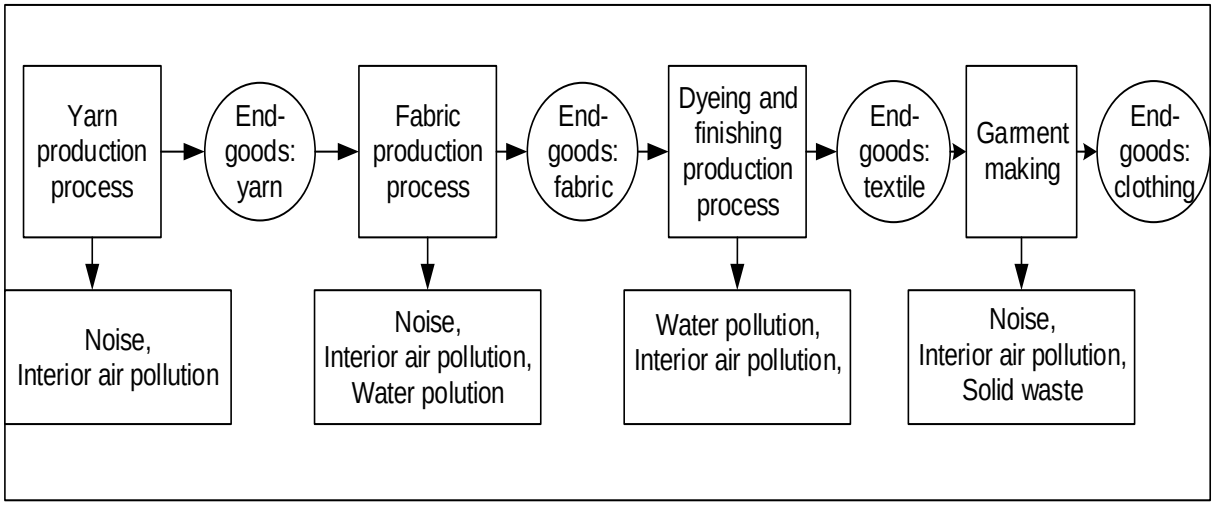

Figure 2.13 Environmental impact within textile and apparel process production (Source: Nguyen *et al*., 2014:193)

It can be seen in Figure 2.13 that solid, liquid and air pollution are considered to have an environmental impact in regard to the textile and apparel production process. Furthermore, noise and interior air pollution are recognised as having direct impacts on workers. Water pollution and the use of water volume are considered the foremost concerns in textile dyeing and finishing production processes (Hessel *et al*., 2007). Moreover, Europe dye manufactures have supplied at least 40% of chemical dye stuffs worldwide (ibid). Nowadays, dyestuff manufactures have relocated to developing countries, in line with relocated textile manufactures, securing sites in less developed nations (ibid).

Textile customer organisations have initiated tools in attaining environmental sustainability within the entire supply chain (De brito *et al*., 2008). There are five methods applied in order to achieve virtuous environmental sustainability in the textile and apparel supply network, namely the usage of organic fibre, recycling and reusing materials, second-hand products, and

clean and green technology (Caniato *et al*., 2012). A number of organisations have initiated cotton organic standardisation and certification schemes, such as European Eco label, Oekotex 100 and Global organic textiles, whilst other textile enterprises have also developed particular standardisations due to variety meaning in terms of green cotton (Van Bommel, 2011). Environmental management system certification, such as ISO 14001, is commonly adopted as an environmental indicator in the supplier selection process assessment (Nawrocka, 2009). However, this certificate is not extensively used as environmental assessment by textile customer organisations owing to the fact that the ISO 140001 certification is expensive and excessively complicated (ibid). As trade-off, textile and apparel customer organisations have developed environmental standards to evaluate the environmental impact throughout the textile production process completed on a production site (ibid).

In spite of the significant example in greening supply chain management in apparel industry, however, Zhu *et al*. (2008) argue that accomplishing virtuous environmental sustainability performance in the global supply chain is challenging. Despite the fact that textile manufacturers have relocated to lesser developed nations, in contrast, evidence in environmental management practices in textile SMEs from developing regions is scarcely present (Nguyen *et al*., 2014). The greening global apparel supply chain programme initiated by prominent apparel brands has experienced scarce success due to suppliers from developing regions struggling to comply with environmental requirement standards (Faisal, 2010). Key triggers in adopting the environmental management system is different between apparel SMEs and MNEs in developed countries (Caniato *et al*., 2012). Pressure from both end-customers and societies are recognised as the main reason behind MNEs' apparel suppliers adopting environmental sustainability practice in developed countries, whilst SMEs from developing countries are inactive in adopting environmentally friendly production processes due to less force and pressure from local authorities, customers and society (Nguyen *et al*., 2014).

The obstructions in adopting the environmental management system in textile and apparel SMEs in each developing nation are divergent. Textile SMEs in China, for example, are highlighted as the majority industry that plays a role in water and air contamination not only due to the enterprises being under pressure to produce goods at a competitive price in order to manage sustainable business, but also as a result of the lesser support and economic incentives afforded by authority (Shi *et al*., 2008).

A number of international organisations have been initiating voluntary programmes, such as environmental management training, and have provided assistance in mind of supporting textile and apparel SMEs in a number of Asian countries, including India, Thailand, Sri Lanka and Pakistan, in relation to adopting environmental management practice (Luken & Stares, 2005). However, the outcome of the assistance programme remains ineffective due to the programme being considered temporarily based (ibid). Nguyen *et al*. (2014) argue that defining key actors that have a significant contribution in terms of encouraging apparel suppliers amongst the apparel SMEs' supply network are essential to developing the right stages in implementing environmental sustainability practices (ibid).

Adopting environmental management practice in Indonesian textile and apparel SMEs spans far beyond effective as it does occur in other lesser developed nations, as well as related barriers in adopting the environmental management system. Batik textile is basically generated from natural and artificial fabrics, with a subsequent dyeing process in order to produce end-goods. Thus, water waste management is highlighted as an essential treatment as opposed to solid and air waste management. In general, the water waste of the batik textile production process contains biological oxygen demand (BOD), chemical oxygen demand (COD), total suspended solid (TSS) and salinity (Subki *et al*., 2011).

The Government of Indonesia enacted Government Law No. 82, 2011, as a national regulation to which Indonesian enterprises need to abide when treating solid, air and water waste (Kurniawan *et al*., 2013). However, it has been pointed out by numerous batik textile SMEs in Indonesia that environmental treatment was not provided alongside the production process. Stakeholders' participation is needed in order to initiating better approaches to encourage batik textile SMEs in establishing water waste treatment (ibid). Rinaldi *et al*. (2014:86) define stakeholders in the context of sustainability as follows:

'Individuals or groups within the society that were very close to the organisation along with others that were very remote from the organisation (and could even include future generations) all of whose life experiences and interests were impacted in some way by the organisation's operations, policy and/or practices.'

2.6.1.2 Social Sustainable Supply Chain Management in the Textile and Apparel Industry

Research in social sustainable supply chain management is not as voluminous as research in terms of environmental sustainability (Ashby, 2012). The ambiguity highlighted in social sustainability performances is considered the main reason as to why published scientific literature in social sustainability is scarce when compared with periodicals in terms of environmental sustainability (Banerjee, 2010, cited in Ashby, 2012). Moreover, Ashby (2012) points out four categories in formulating social sustainable supply chain management, namely external population (referring to public investment and human productivity), macro social performance (which encompasses labour safety and healthy working condition), macro social performance (relating to socio economic and environmental enactment), and stakeholders' participation (concerning stakeholders' involvement in the deliverance of information) (Labuschagne *et al*., cited in Sarkis *et al*., 2010).

Apparel-making is exceedingly dependent on labour-intensive jobs, as the production stages do not require high technology. Human activities in the apparel-production processes include marking, cutting, and sewing and trimming, which are most likely unreplaceable. Therefore, the majority of apparel exporters, as shown in Table 2.8, reside in developing countries, which means labour costs remain low in comparison with labour costs in developed nations. In addition, environmental effects as a result of apparel-marking can be seen in Figure 2.13, which is least conceivable when compared with the textile production process. In consequence, social issues frequently arise at apparel floor sites, which geographically reside in lesser developed nations. Various factors, such as workers' rights and the production site itself, generally require supplier assessment indicators in apparel suppliers (Dickson & Eckman, 2006; Marks & Spencer, 2014; Rourke, 2003).

Sweat shop working conditions are highlighted as the most prominent issue in social sustainability amongst apparel suppliers in lesser developed nations (Emmelhainz & Adam, 1999). However, social sustainability issues in apparel suppliers in developing countries remain astonishing not only to the nature of the textile and apparel business climate, which is uncertain, but also owing to the high competition amongst apparel producers' vigour to cut production costs by ignoring workers' rights (De'Abreau *et al*., 2012). International certification in social sustainability mainly refers to ISO 18000 standard as a guideline in the supplier selection process throughout textile and apparel supply chains (Van Bommel, 2011).

However, the guidelines of ISO 18000 standards are difficult to obtain in textile and apparel enterprises, although they have a position in developing countries (ibid).

Corporate Social Responsibility (CSR) agenda is highly adopted by international textile and apparel corporations in an effort to respond to international communities' expressions concerning accountability and sustainable business (Rahim & Wisutisak, 2014; Luken & Stares, 2005; Moon, 2007). The CSR encompasses business activities not only linked with social demands of business management but also liable social consequences of business activities (ibid).

In response to questioning in regard to the spur in broadcasting CSR reports by numerous MNEs, merely beneficial to companies' shareholders rather than stakeholders, four drivers are identified as new reforms of CSR agenda, namely market, social, government and globalisation (Moon, 2007). Market drivers involve customers, workers, end-users, suppliers and investors, all of whom contribute high effects in terms of good practice of CSR (ibid). For instance, customers of retail corporations adhere to supplier codes of conduct as a compulsory requirement in supplier selection and monitoring throughout the global supply chain (Frenkel & Scott, 2002, cited in Moon, 2007); boycott campaigns to international apparel brand are mobilised by consumers due to the apparel principals implemented, inducing unethical business in apparel outsourcing in Burma and Bangladesh (ibid); workers' rights and working conditions are considered main drivers for customers in adopting good practice of CSR agenda (ibid). Social drivers not only concern customers and investors but also non-government organisations, media, individuals, experts and associated groups. Public and community awareness highlight positive impacts on improving CSR practice (ibid). Positive impacts towards the implementation of good CSR practice have been initiated by authorities from developed nations, and nowadays, CSR agenda has been disseminated across government bodies in developing nations (ibid). The term 'globalisation' not only relates to exploitation and negative views, but also highlights positive opportunities in economic growth improvements in lesser developing nations (ibid). In order to accommodate good practice in responsible and sustainable business in developing countries, nowadays, CSR good practices guidelines have been initiated not only by MNEs in developing countries but also state by nations' leader as national agenda (ibid).

In addition, the effectiveness of CSR agenda can be achieved by customer organisations' involvement throughout their own supply chain in order to assure that all supply chains are

conducting business practice in a socially responsible manner (Ciliberti *et al*., 2009). The majority of textile and apparel prominent principals have initiated training programmes with a focus on knowledge and skills' improvement of textile and apparel workers who works in apparel suppliers in developing countries (ibid, Chiu, 2009). However, CSR programmes merely favour workers in textile and apparel big enterprises rather than apparel SMEs in developing nations (Chiu, 2009; Gardener, 2012). Furthermore, apparel big enterprises in developing nations, such as Vietnam, Bangladesh, Cambodia and Indonesia, are mostly distinguished as receiving Foreign Direct Investment by textile and apparel MNEs from a number of countries, such as Taiwan, South Korea, China, Hong Kong and Jordan (Azmeh & Nadvi, 2014). Moreover, apparel big enterprises from developing nations have a direct relation to their international customer organisations (Merk, 2014). Thus, apparel workers in MNEs have been receiving in-house training from international customer organisations.

As the largest global supply chain industry, textile and apparel customer organisations, which are mainly recognised as international prominent brands, oblige their apparel supplier organisations, including SMEs, to demonstrate CSR activities (Baden *et al*., 2009. Rahim & Wisuttisak, 2014). Baden *et al*. (2009) point out four criteria, including health and safety, environmental issues, workers issues and community issues, which are prioritised as CSR business practices. In addition, SME owners' and managers' values are highlighted as the main motivation of SMEs in developed nations to engage with CSR agenda rather than to accommodate customer pressure (ibid). Such SMEs' owners or managers voluntarily conduct social and environmental management practices as part of CSR consciousness, as opposed to merely complying with regulation and bureaucracy (ibid).

Factors such as customer behaviour, incomplete information in local law and cultural differences are highlighted as barriers to transferring socially responsible behaviour from apparel SMEs' customers residing in developed nations to textile and apparel SMEs residing in developing countries (Cilliberti *et al*., 2009). In addition, apparel SMEs in Bangladesh struggle to complete social sustainable business practices, which are urging by customers due to apparel SMEs being regarded as second-tier suppliers; thus, they adopt local values as the CSR approach is suggested to attain sustainable business (Rahim & Wisuttisak, 2014).

2.6.1.3 Economic Sustainable Supply Chain Management in the Textile and Apparel Industry

Research that explicitly specifies the economic sustainable supply chain management published in periodicals is not as large as research on environmental and social sustainability (Ashby, 2012). It is anticipated that adopting social and environmental sustainable supply chain management can improve economic sustainability (ibid). The recent trend in evaluating triple bottom line sustainability is referred to as 'enterprise performances', and includes business and operations as economic performance, social performance, and environmental performance (Chen *et al*., 2014). Moreover, business performance evaluation is based on enterprises' profitability and development growth, whilst operational performance is traced in terms of production costs, delivery, quality and flexibility (ibid).

An example in evaluating enterprise performance in accordance with environmental sustainability is initiated by Global Reporting Index (GRI). The GRI guidelines established the environmental sustainability metric, which includes energy consumption, recycled materials and product waste, water pollution and consumption, CO_2 emissions, chemical substance and environmental certifications as baselines to assessing enterprises' environmental performance (Caniato *et al*., 2012). Addressing social sustainability performance is not as vibrant as addressing environmental and economic sustainability performance (Caniato *et al*., 2012; Ashby *et al*., 2012; Chen *et al*., 2014). Therefore, further studies in social aspect and social performance is beneficial to enriching scientific research in social sustainable supply chain management (ibid).

2.6.2 State-of-the-art Review Sustainable Supply Chain Management in the Textile and Apparel Industry

Researches in sustainable supply chain management have been developed for more than twenty years; however, research published in periodicals that specifically explore social sustainability is rarely found (Ashby, 2012; Turker & Altunas, 2014; Chen *et al*., 2014). Furthermore, research in sustainable supply chain management in the textile and apparel industry is highly suggested in order to explore distinct characteristic within industrial sector (Turker & Altunas, 2014).

Whilst the majority of textile and apparel supplier enterprises are located in developing countries and the majority of supplier organisations are considered SMEs, numerous scientific periodicals provide information in regard to the limitations associated with adopting environmental and social sustainability business practices. In spite of the evidence shown in periodicals to suggest that adopting social and environmental sustainability is challenging for textile and apparel SMEs positioned in developing countries, on the other hand, there is little evidence presented on periodicals to elucidate obstacles for SMEs in adopting social and environmental sustainability. The state-of-the-art references related to triple bottom line sustainability linking to the supply network is presented in Figure 2.14.

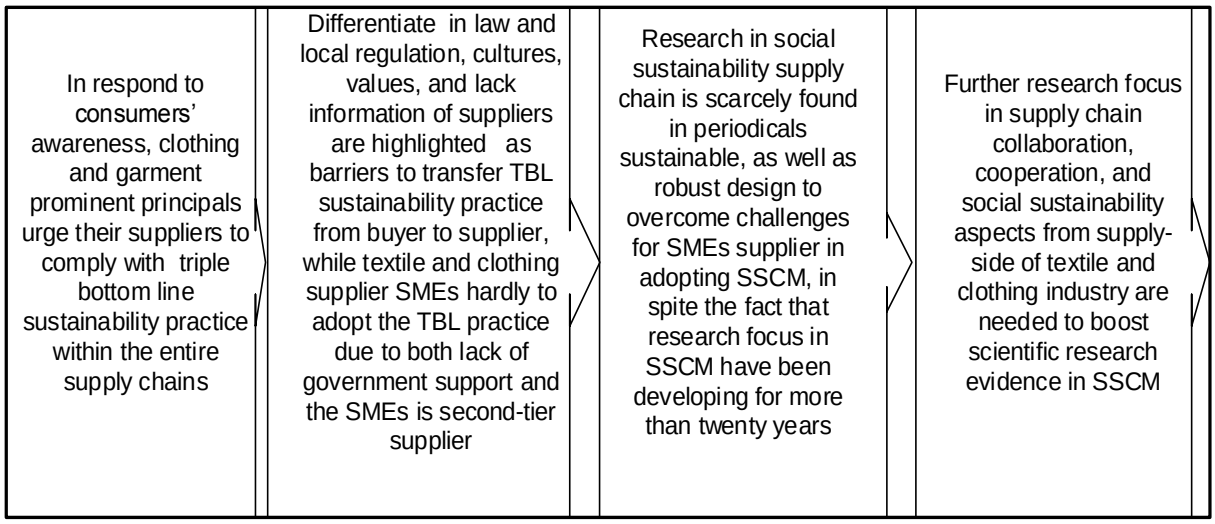

Figure 2.14 State-of-the-art references in sustainable supply chain management

2.6.3 Toward Sustainable Supply Network Operations in Textile and Apparel Industry

Research in sustainable supply network of management is in early stages in comparison with research in sustainable supply chain management. In addition, scientific publication, as research-based, in exploring triple bottom line sustainability, linking to global supply networks in the textile and apparel industry, are scarcely found (Van Bommel, 2011). One example in reviewing the sustainability supply network in the textile sector in the UK was carried out by The Institute for Manufacturing, University of Cambridge UK, which stated that low-cost outsourcings products, high-cost labour, a lack of government support and very high standards in implementing health and safety in terms of site production are driving organisations to

outsource goods from developing nations (Alwood *et al*., 2006). In addition, the majority of textile and apparel industry customer organisations are located in developed nations. These customers are concerned with the social and environmental aspects of production. In consequence, textile and apparel export enterprises in developing nations are obliged to comply with sustainability requirements.

The evolution of the supplier selection assessment has shifted from a traditional approach that mainly focuses on quality as the most necessary criterion used for evaluating supplier performance, followed by delivery and cost, and then expanding to human rights, the environment and consumer safety as the main criteria in supplier selection in the textile and apparel industrial sector (Park & Lennon, 2006; Jiang, 2009; Ho *et al*., 2010). The degree of power is considered the main reason behind enterprises' supplier organisations from developing countries engaging with sustainability business practices (Van Bommel, 2010).

There were inadequate case studies revealing how tier-suppliers within supply networks engage with sustainability requirement (Van Bommel, 2011). In addition, the complying codes of conducts of supplier, as required by customer organisations, were considered major reasons behind the apparel exporter engaging with sustainability requirements (ibid). A case study centred on Sri Lankan apparel suppliers revealed that the apparel exporter companies in developing countries agreed with implementing triple bottom line sustainability owing to pressure from their customers (McCarthy & Jayarathne, 2012).

Whilst collaboration and cooperation are highlighted by scholars in numerous scientific publications in regard to research in sustainable supply chain management (Ashby *et al*., 2012), Social Network analysis is recognised as a comprehensive approach, not only in visualising supply network structure but also in capturing interdependencies amongst actors within the entire supply network (Hearnshaw & Wilson, 2013; Kim *et al*., 2011). Social network analysis is an analytical method used as a basic assumption of the importance of relationships amongst entities within a network (Wasserman & Faust, 1994; Kim *et al*., 2011). In addition, quantifying network structure using Social Network Analysis, based on material flow and conceptual relationships, highlight inadequacies of synchronisation between suppliers and governance mechanisms, involving specific degrees of closeness at the network level (Kim *et al*., 2011).

Furthermore, a recent study in implementing sustainability business practice—where sustainability-driven means collaborations with stakeholders, such as experts, academics and

end-customers, as being beneficial to earning long-term profit—was carried out by Kiron *et al*. (2013). Whilst scholars conclude that there is no robust method in designing a sustainable supply network, Enterprise Engineering Frameworks is anticipated as a template design to identify improvement options within extended enterprises across a supply network (McKay *et al*., 2009). In addition, the Enterprise Engineering framework has been used as template design to define, develop and deploy sustainability preferences in Malaysian Palm Oil Industry so as to present sustainability performance with a focus on environmental sustainability indicators (Choong & McKay, 2014). Table 2.10 depicts Enterprise Engineering Frameworks as a template in configuring the sustainable supply networks in the Indonesian textile and apparel industry.

Table 2.10 Enterprise Engineering Frameworks in Indonesian textile and apparel industry (Adapted from Choong & McKay, 2014)

	Define	**Develop**	**Deploy**
Purpose	To improve organisational sustainable supply network operations in developing country		
Agency	Indonesian textile and apparel enterprises include small and medium-sized enterprises	Theoretical framework toward sustainable supply network	
Product and service			Indonesian textile and apparel enterprises action regarding sustainability requirement

As shown in Table 2.10, based on the discipline of Enterprise Engineering framework, a theoretical framework towards sustainable supply network operations for Indonesian SMEs can be explored. Indonesian SMEs and their supply networks sit along the Agency row with the purpose of improving organisational sustainable supply networks in developing countries. The performance of Indonesian SMEs will be explored through case studies with a view to how

Indonesian SMEs' actions comply with codes of conduct of sustainability within their supply network.

2.6.3.1 Research Area toward Sustainable Supply Network Operations in the Indonesian Textile and Apparel Industry

Key learning from the literature review falls into two areas: the measurement of sustainability and supply networks operation. The two research areas relate to emerging research areas concerning sustainable supply network operations, as presented in Figure 2.15.

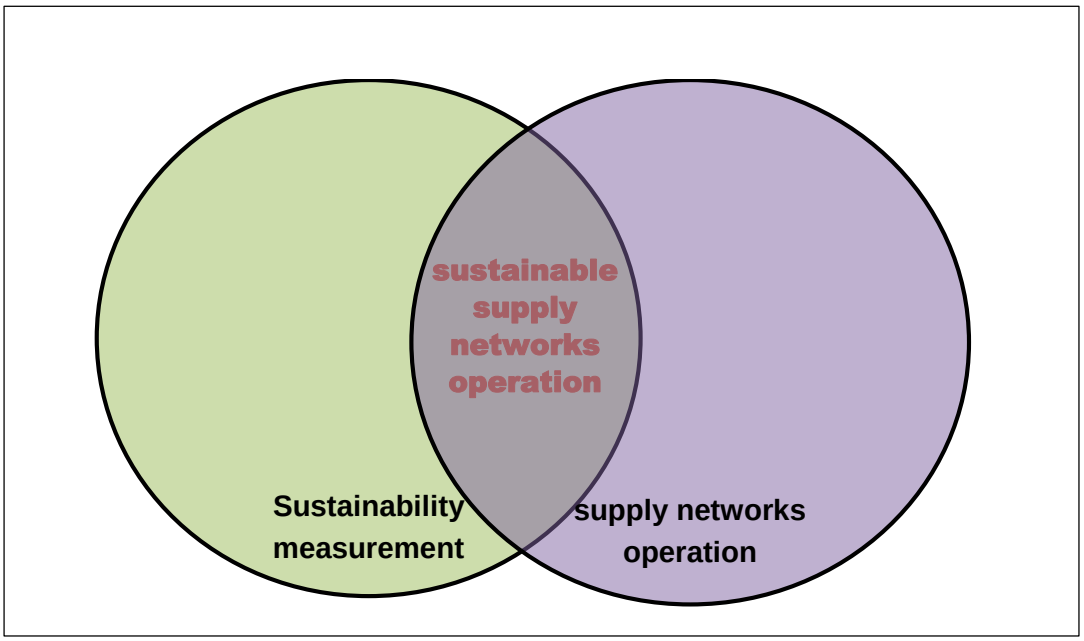

Figure 2.15 Research area on sustainable supply network operations

2.6.3.1.1 Measurement of Sustainability

The review of the literature concludes that, in theory, sustainability can be measured using triple bottom line sustainability, namely, environmental, social and economic sustainability. However, in practice, well-accepted measurement methods are only available for financial aspects of economic sustainability. Ways of measuring social and environmental dimensions of sustainability are less developed. These are in the context of the Indonesian textile and

apparel industry, where environmental and social sustainability are the key areas highlighted in the customer codes of conduct. For this reason, this research focuses on social and environmental sustainability.

In terms of environmental sustainability, many research projects and publications provide case studies that are available in the literature; however, little literature describes the full-scale industrial implementation of research findings. Alkaya & Daimer (2014), for example, report the development of a method for minimising the environmental impact of the textile production process. However, the method requires further verification before it can be rolled out to the industry. In terms of social sustainability, there is research based on human rights in accordance with the United Nation declaration regarding social sustainability practices; however, current best practice focuses on finding ways of implementing social sustainability on a global scale as opposed to in specific supply networks or industries.

2.6.3.1.2 Supply Network Operations

Recent trends in the global economy show that the majority of well-established supply networks of profit-making organisations consist of organisations from multiple nations. For this reason, the textile and apparel industry is highlighted as a good and complex example in analysing comprehensive industrial supply networks. In terms of mapping the structure of supply networks, number frameworks have been proposed. Every framework has advantages and drawbacks; however, thus far, there has been little reference to mapping the supply network structure in line with the context of textile and apparel industry supply networks, with these not explicitly covering roles of SMEs in textile and apparel supply networks. MacCarthy & Jayarathne (2011), for example, report on the network structure of Sri Lankan apparel medium-scale enterprise; however, supply networks provide information regarding the apparel industrial sector as whole information, with a finer granularity, is needed in order to support this research and limited information concerning the customer–supplier relationship. Considering the need to be able to assess supply network sustainability, revealing the structure of supply networks in textile and apparel SMEs in developing countries is essential.

2.6.4 Theoretical Framework

It shown in Table 2.9, the Enterprise Engineering Frameworks were used in order to formulate tools in delivering sustainability linking to supply networks in the Indonesian textile and apparel enterprises, including SMEs. The results of the literature review have informed the establishment of a framework that was used to structure this research. The framework combines the Leeds Enterprise Engineering model with lessons learnt through the literature review. Five points were addressed as key points garnered in regard to sustainable supply network management in the textile and apparel industry, as follows:

1. Textile and apparel industry is the most global production supply network which characterise by majority supplier organisations reside in developing region of Asian countries while the majority consumer organisations reside in developed nations.
2. Sweat shop working conditions are the main social sustainability issue in the textile and apparel industry, and sweatshop issues remain in spite of numerous anti-sweatshop campaigns, conducted by organisations, individuals and government bodies.
3. There are broad meanings to measuring sustainability and how these can be validated. Therefore, textile apparel and apparel customer organisations have established sustainability codes of conduct to review their supplier organisations throughout supplier selection processes.
4. The current case study evidence in sustainable supply network management in the textile and apparel industry is inadequate, as are case studies conducted in textile and apparel SMEs.
5. Stakeholders' participation is highlighted as the practical approach to boosting business organisations' adoption of sustainability practice.

Based on the lessons learnt from the literature review, a theoretical framework in textile and apparel SMEs is proposed in Figure 2.16. It can be seen on Figure 2.16 that the theoretical framework is generated from the Enterprise Engineering template (Choong & McKay, 2014). The lifecycle stages of the Enterprise Engineering Framework—namely define, develop, deploy, *a, d, f*—identify a need to further investigate the second cycle. Moreover, the second cycle is focused on develop *e* in regard to theories/framework towards sustainable supply network operations in Indonesian textile and apparel SMEs. The proposed theoretical framework is initiated with a question concerning how to define social and environmental sustainability, *b*, as explored through the literature review. Furthermore, in order to answer

questions about what to deploy, stakeholder participatory, *g*, the first stage, is concerned with exploring literature references regarding stakeholder participation on sustainability practices.

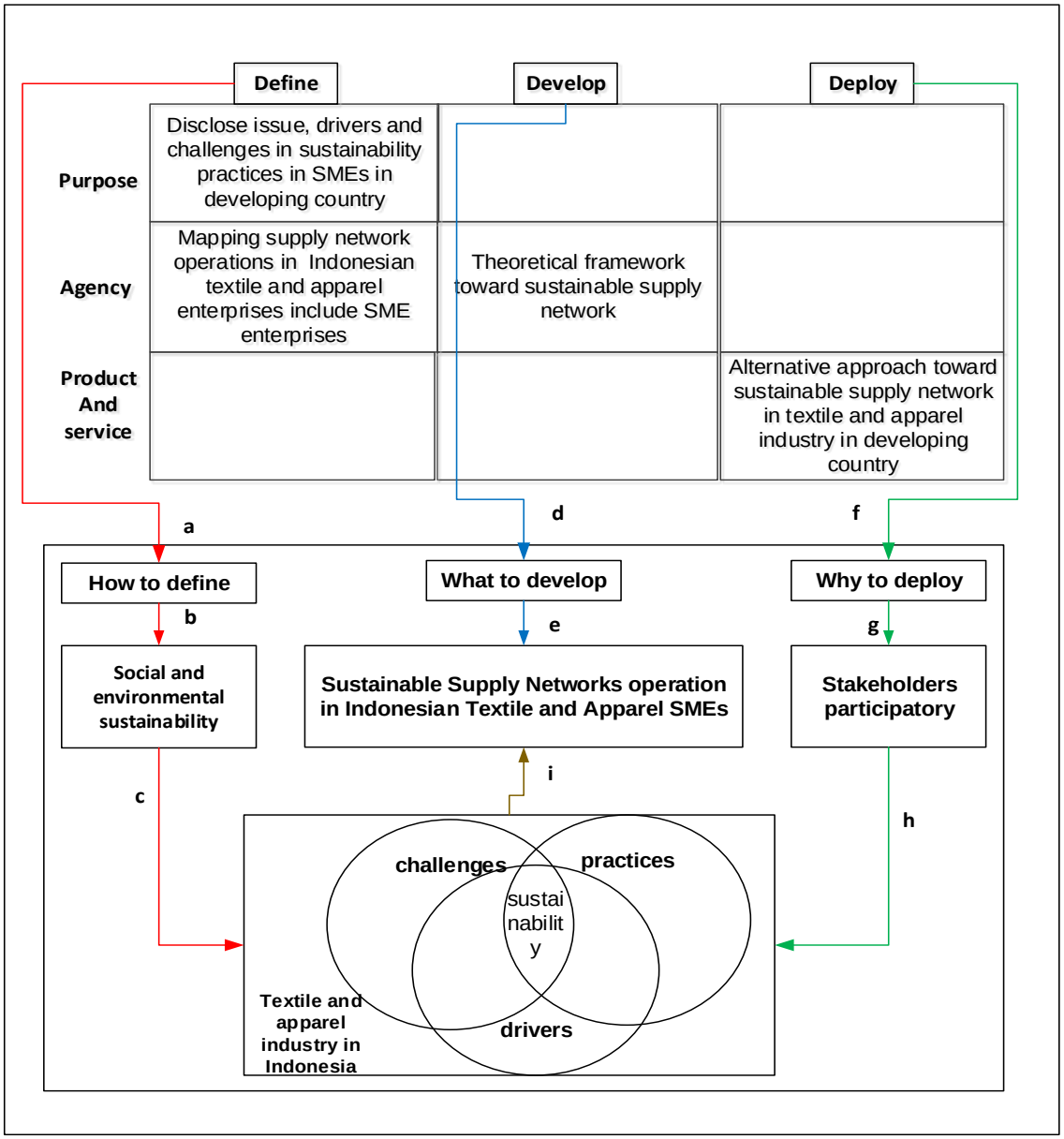

Figure 2.16 Theoretical framework (Source: Author's own illustration)

It shown on Figure 2.16 that the results of *c* and *h* can be directed to conducting field verification as case study evidence from the Indonesian textile and apparel industry. The result from *i* is used to enrich field verification towards sustainable supply networks operation in Indonesian textile and apparel SMEs.

2.7 Summary of key gaps of knowledge

The following knowledge gaps were identified as a result of the literature review.

- Although human rights, environmental issues, and consumer with safety are considered key criteria in supplier selection processes, there are tensions between actual sustainability practices used by the majority of textile and apparel suppliers that reside in less developed countries. Although widely accepted, the literature does not provide detailed methods for the assessment of triple bottom line criteria and drivers that are suitable for use by SMEs in countries such as Indonesia
- Methods and tools to support the mapping and definition of supply networks are available but typically are applied to the mapping of global supply networks where SMEs tend to be aggregated into individual entities. As a result, no literature was found where the sustainability of industrial SMEs in supply network contexts assessed or quantified.
- The literature acknowledges that there are no distinct approaches to overcome the problems faced by textile and apparel SMEs in developing countries in complying with. The majority of suppliers have limited power and resources to comply with environmental and social sustainability practices required by the international customer organizations. In part this is a result of limited power resources within industrial SMEs, Porter's cluster theory proposes groupings of enterprises to form clusters that have the potential to access more power and resources than individual members. However, scientific evidence presenting real case studies of the application of Porter Cluster Theory in the textile and apparel SME clusters in developing nations were not found.

Chapter 3
Research Methodology

This Chapter focuses on the selection of the research approach. Overall, a balanced approach was used. This is an approach that combines qualitative and quantitative methods to enable observation of different aspects of a case study situation. The qualitative part of the cycle was based on the data collected in Indonesia through field work and was used to inform field verification of theories from literature identified in the quantitative method. The quantitative part of the cycle was based on the theoretical framework outlined in Figure 2.16. Explanatory, and descriptive approaches were used to explore the case study. Explanatory analysis was used to investigate existing concepts to extend to a different group of people and to compare and contrast whether the established theory fits a different situation. Descriptive analysis was used to characterise actors, events and situations through observation and field research.

A summary of the research process and methods is presented in Figure 3.1.

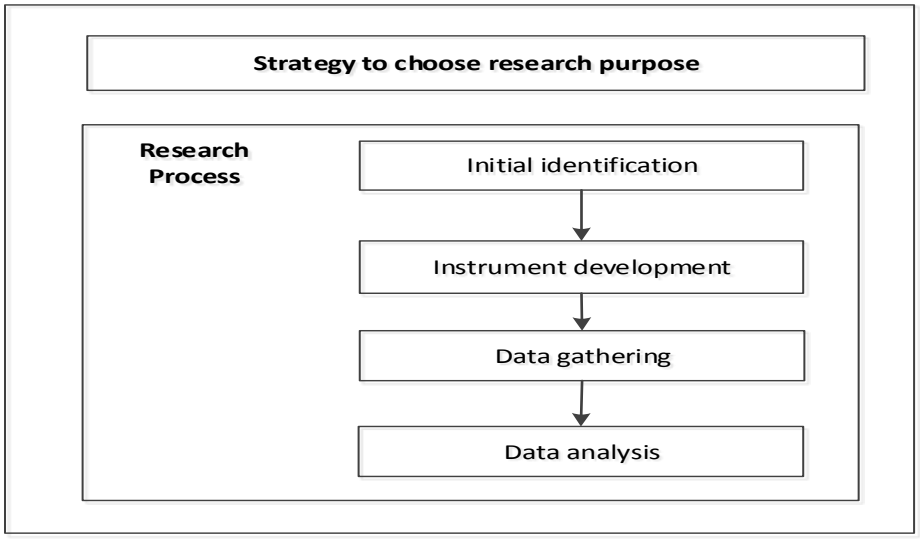

Figure 3.1 Research Method and process (Source: Author's own illustration)

The Chapter begins with a review of the research goal; this is used in an effort to inform the selection of the overall research methodology. The study uses a combination of explanatory and descriptive research methods. The reasoning behind this choice is explained when considering the strategy in choosing a suitable research method, based on the nature and

purpose of the research. The research process is explained in the next Section. A key decision to use both qualitative and quantitative data collection methods is explained. The stages include initial identification, instrument development, data gathering and data analysis. This stage includes a sampling strategy and the way in which population is distinguished, narrowing down to strata, and sample frame. Data analysis is presented in the last Section.

3.1 The Strategy for Choosing the Research Purpose

There was a large body of literature on research design. In choosing an appropriate research approach, a number of approaches were considered, as shown in Table 3.1. It can be seen that different types of methodology are suited to specific purposes. In Table 3.1, the purpose of the research is organised into three different groups, namely exploratory, explanatory and descriptive (Neuman, 2011). A study may mix different categories so as to explain and describe the phenomena under investigation; however, every study has a dominant research purpose throughout the study (ibid).

Table 3.1 Summary of Research Purposes (Adapted from Neuman, 2011: 39)

Category	Question of Research	Research Purpose
Exploratory	What was the problem?	− Awareness of the basic facts − Convey the question for future research − Determine feasibility study − Create and generate new ideas − Develop method for future research data
Descriptive	How does it happen?	− Portray accurate situation − Provide new data that reverse with previous one − Clarify the categorisation of stages − File a causal instrument
Explanatory	Why does it occur?	− Investigate the prophecy of theory − Enrich a theory to extent to new topics − Support or counter a concept or theory − Decide which of such concepts was the best

It can be seen in Table 3.1 that the main research question relates to understanding a problem. *Exploratory research* tends to be conducted in an effort to generate new theory, and is based on new subjects. Furthermore, such an idea has not been extensively explored. *Descriptive research* aims at describing phenomena in a well-documented relationship, situation or social setting.

This research was initiated in consideration to how the situation occurs and who was involved. *Explanatory research* starts with the question, 'Why does it occur?' This approach has to investigate well-defined theory or issues, although such theories need to reconfirm why the situation arose. The approach is given in Chapter 1, detailing a combination of both explanatory and a descriptive method is used in this study. With regard to the research goal, the research describes the phenomenon of sustainability in a supply network context.

3.1.1 The Balanced model approach Golicic et al. (2005)

The balanced approach model was used as the research approach for this study. This mixed approach comprises both qualitative and quantitative approaches (Golicic *et al*., 2005). Using qualitative and quantitative data, the results are enriched by supporting elaboration and the development of analysis, and providing details of the problem (ibid).

The balanced model is an approach combining qualitative and quantitative so as to observe different aspects of the same reality. As mentioned above, the study depends on developing an understanding of sustainability from previous research through literature review. Figure 3.2 highlights the cycle of the balanced approach model theory developed by Golicic *et al*. (2005).

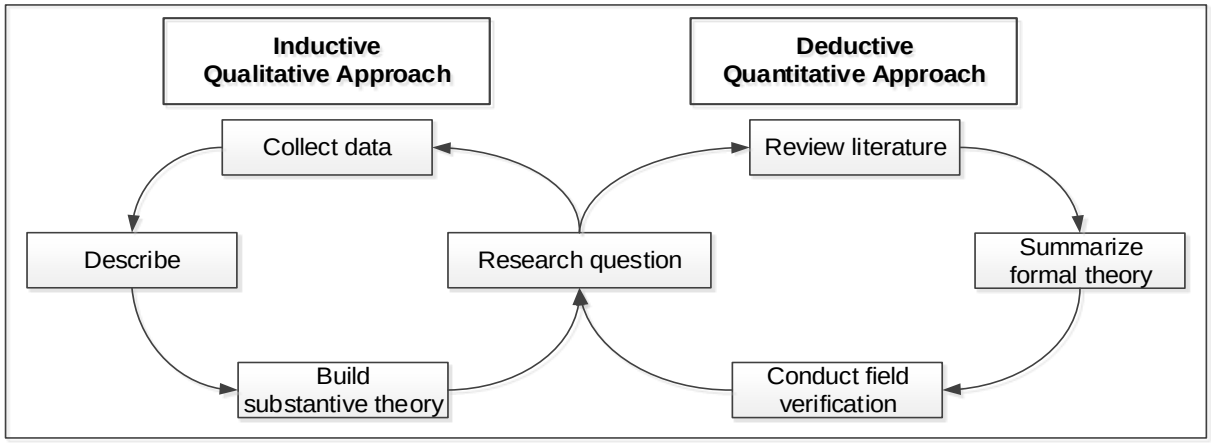

Figure 3.2 The Balanced Approach Model (Adapted from Golicic *et al*., 2005).

As shown in Figure 3.2, a research question is the core of the balanced approach. The quantitative approach was based on deductive reasoning, which was underpinning from more general to specific ideas. Deductive reasoning was recognised as a top-down approach. It was started from a given hypothesis or a hypothesis based on theories or frameworks concerning a phenomenon or phenomena, and then further explores, explains and/or describes the hypothesis through observations in a real life context in order to verify the hypothesis.

The first stage on the quantitative path is reviewing the literature in order to highlight variables of conceptual or theoretical frameworks, and the potential relationships amongst them. At this stage, the researcher may carry out a pilot study by completing a pilot survey through the use of interviews. The purpose of a pilot interview was centred on clarifying the variables and relationships amongst them as opposed to generating a theory. The next path was to build formal theory. Golicic *et al*. (2005) highlighted formal theory as:

'Formal theory applies to many phenomena and many people in many places.'

The third step was data collection using measurement instruments, such as the completion of a field survey. The purpose of data collection was to verify the formal theory. The conclusion of the quantitative study was centred on understanding and explaining the phenomenon, generating more questions to be answered in future research (ibid).

Inductive reasoning works from a specific idea with the objective to generate a comprehensive conclusion. The inductive method was well-known as a bottom-up approach. The first stage of the qualitative cycle was data collection. Substantive theory produced by the qualitative approach was obtained from real data as opposed to literature. The second stage was centred on describing the phenomenon from the point of view of key stakeholders.

3.2 Research Process

The research process used in this study is presented in Figure 3.3. It is shown in the Figure that the theoretical framework, as a result of the literature review and pilot field work, *a*, is used to inform the next stage, namely instrument development, *b*. The preliminary field work supports data gathered from both scientific publication and the pilot field work, and is used to provide enlightenment for the next research stage concerning the development of the research instrument. These stages include the creation of an interview protocol and questionnaire designs, the validation of interview tools by language expert, and the subsequent amendment of interview tools. Interview tools result on *b* then are used as tools for the next step, namely

data collection. These steps include the completion of the qualitative stage by carrying out preliminary onsite observations to a number of Indonesian textiles and apparel enterprises. Furthermore, semi-structured interviews utilise questionnaire tools that construct a qualitative cycle, which is conducted to gather information about sustainability practice. The data from *c* then leads to final stages in the data analysis process. The stage includes transcribing the data, summarising key finding and analysing key findings using the social network analysis approach.

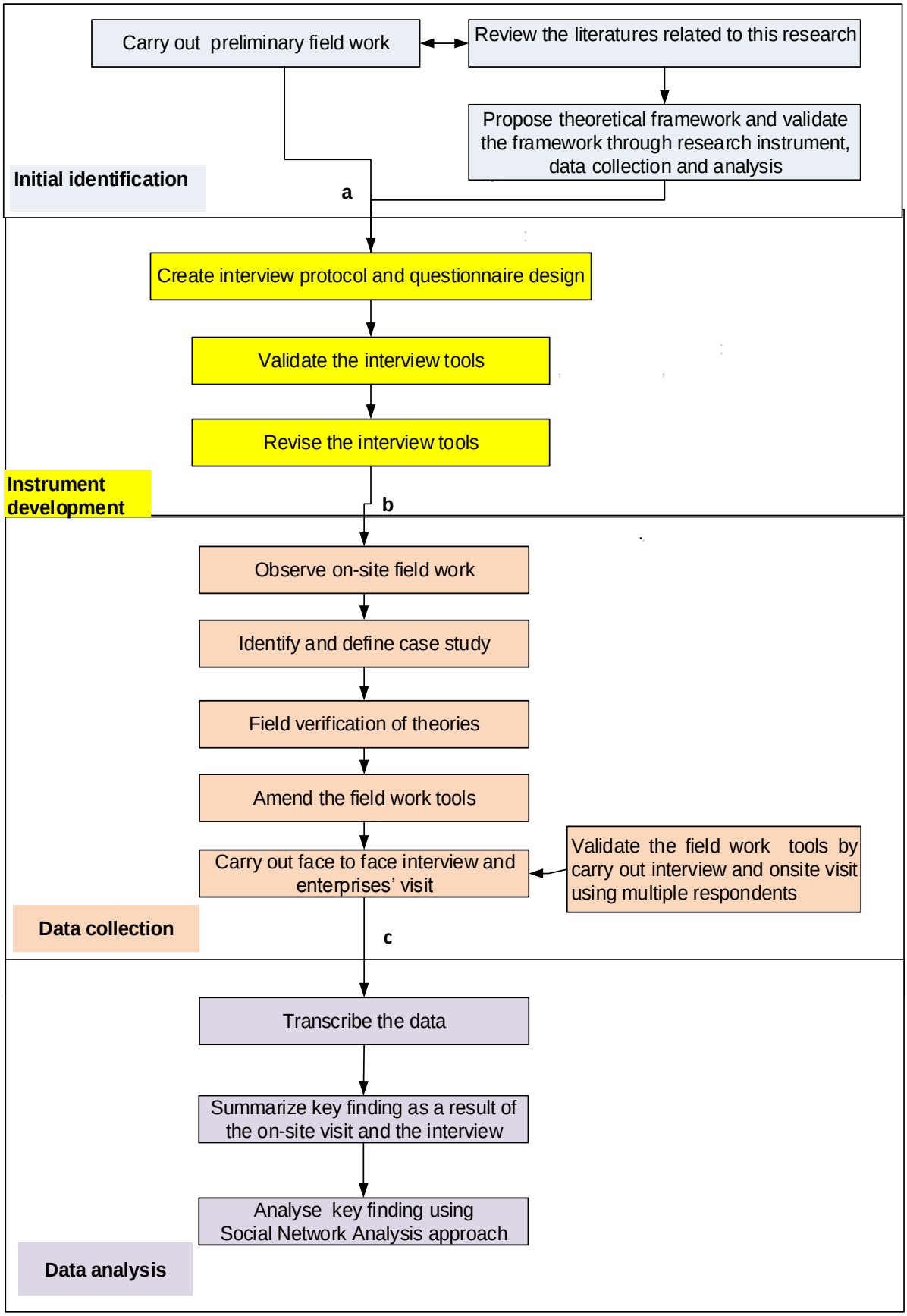

Figure 3.3 The research process

3.2.1 Initial identification

3.2.1.1 Carry out Preliminary Framework

A parallel pilot survey was carried out in an Indonesian SME Industrial cluster in an effort to highlight new findings based on what was happening in Indonesian SMEs. The preliminary study included on-site visits in a Batik medium-size enterprise, as well as face-to-face interviews with three SMEs stakeholders, including an SME owner, three SME workers and the head of a Batik SME industrial cluster.

3.2.1.2 Review the Literature

The literature review and preliminary filed work were part of the initial stages of the research. The reviewed literature was used in order to develop a deeper understanding of the phenomenon sustainability in developing countries in the supply network context, as based on previous literature. In addition, the theoretical framework was proposed as a result of the literature review. The summary results from a preliminary study, as well as theoretical framework as findings from the review literature, were used to inform the development of a questionnaire, which was designed in the next step.

3.2.2 Instrument Development

3.2.2.1 Create Interview Protocol and Questionnaire Design

The instrument development included questionnaire protocols generated to conduct field research. In addition, findings from the preliminary field study were valuable in the designing of the questionnaire so that it was suitable for use in the field of Indonesian textile and apparel stakeholders. The first step of instrument development was creating interview protocol and questionnaire design as tools in conducting semi-structured interviews for this research. Interview protocol was used as standard guidance in approaching prospective respondents. The questionnaire design, as a result of the initial identification step, was translated from English to Indonesian language.

3.2.2.2 Validate the Interview Tools

In order to validate the proposed document in the Indonesian Language, two graduate students voluntarily examined the document. Those two Indonesian students had been studying English Linguistics. Moreover, a set documents comprising an introduction letter, a letter of support from the University of Leeds, a support letter from the researcher's home institution, the research proposal in brief, and questionnaire tools in the Indonesian Language were reviewed by those experts. Once the researcher received feedback, the revision of the proposal document was completed. The final stage involved the revised document in the Indonesian language being re-reviewed by the students.

3.2.3 Data Collection

3.2.3.1 Observe Onsite Field Work

The pilot survey on the field site was conducted prior to the case study being conducted. The onsite visit was carried out across a number of batik small-to-medium-sized enterprises. The majority of the prospective respondents resided in two industrial clusters in Surakarta and Pekalongan. The first field site chosen was that of the Surakarta Batik Industrial Cluster. The first action of the field survey were to visit the Batik Cluster Organisation committee for an initial informal meeting to explain in brief what the researcher were going to do in the study, to gain information about the Batik cluster stakeholders, to get information about prospective respondents as participants in the study, and information about accommodation within the cluster area as the researcher needed to interact with people in the cluster.

Once the informal meeting had taken place with the organisation's committee, the next stage was to visit SMEs and seek permission from the owner for them to participate in the study. The informal meeting included giving the proposal document for the firm's approval. In addition, an informal meeting with the local authority were necessary to give them a copy of the proposal too. As a result of the meeting, formal consent from the local authority were not needed in order to carry out the field study within their area. A number of workers were chosen at random to participate in the interviews, the workers agreed with the conditions and they also received consent from their employers to take part in the field study. However, one worker participated as an interviewee without the employer's consent. Twenty proposals were handed in to SME

owners, fifteen informal meeting were held with workers, four handed in to the NGO committee and the official authority.

A preliminary survey at the Pekalongan Batik Cluster was conducted after field work in the Surakarta Batik Cluster was completed. At the first informal meeting with the Batik Cluster Committee, it was decided which three Batik Industrial Clusters would be the prospective candidates for the case study. The committee appointed the prospective firms and the candidates' names in order to gain accurate information regarding the study. In addition, a number of prospective respondents from institutional Batik stakeholders such as non-government organisations, workers, and the official local authority were chosen according to the committee's recommendations. At the same meeting, the proposal document was handed in to the local authority.

Formal consent was needed to conduct the field study from the authority. As a result, a consent letter from the local authority had to be approved before conducting the interviews. Furthermore, the cycle of events were the same as the initial survey carried out at the Surakarta City. In addition, ten proposals were handed to prospective candidates from large firms. Furthermore, Pekalongan Municipality and Pekalongan Sub-Province were considered as field-site location for multi-national textile and apparel firms. In order to propose participants from large companies and the national government authority, a set of documents were sent by courier service to each candidate. Moreover, ten documents were mailed to the national official authority and fifty proposals were sent to compliance manager level staff at fifty different large textile and apparel companies. Informal discussions were conducted with prospective respondents from the worker group. In total, six workers agreed to participate.

3.2.3.2 Identify and Define Case Study

This research used a single case study. Yin (2009:46) stated that designing single or multiple case studies has their own rationale. As a prominent national industry, Indonesia has complex and holistic industrial processes ranging from the fibre production process, the textile production process, and apparel production. The producers of the goods vary in terms of a firm's size from micro firms, small to medium firms and multi-national enterprises. This industry involves stakeholders with numerous entities and organisations that vary from national and private firms, community, expert and authority.

3.2.3.2.1 Sampling strategy

Sampling was an important aspect in order to generalise findings in a particular subject more generally. Robson (2011) state that group sampling, namely probability sampling was the means by which the probability of selection of each respondent was known. It was shown in Figure 3.4 that the Indonesian Textile and Apparel Industry key stakeholder was defined as the population of the study. Furthermore, stratified sampling was expected to represent sample frame. This approach involves dividing population into a number of sub-groups and the members of group share a particular characteristic.

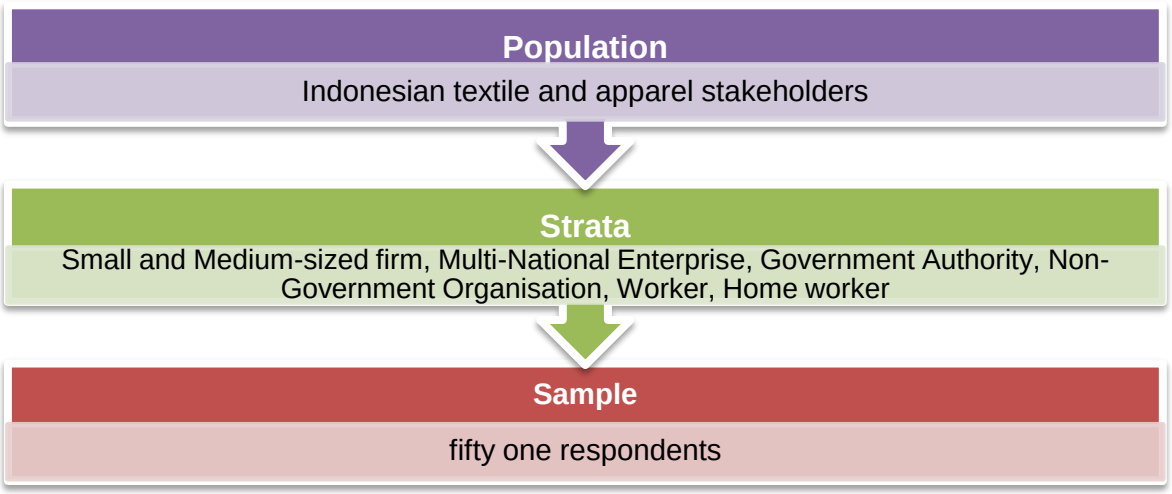

Figure 3.4 Sampling Strategy

It can be seen in Figure 3.4 that the Indonesian textile and apparel industry stakeholders were chosen as the case study population. In terms of industrial size, the Indonesian textile and apparel industry enterprises were categorised in two groups of firm sizes namely multi-national companies and the second was small and medium-sized firm (Bank of Indonesia, 2009). The textile and apparel industry in Indonesia have been developing not only based on the development of such enterprises, but also on the development of the industry contributed by the industry stakeholders. Important roles in the development of Textile and apparel stakeholders include MNE, SME, home-worker, worker, local and national government agency, and non-government organisation.

The next stage was to split the population into six groups, namely small and medium-sized firms, multi-national firms, workers, non-government organisations, home workers, and government authority. Since the sample frame was split into six sub-groups, stratified sampling

was adopted as the sampling method for this research. Disproportional sampling means unequal weighting in each sample size of stratum was considered in determining sample size. This method was chosen to accommodate the different characteristics of strata. Once the strata sample was identified, the final stage was selection of potential participants to participate in the research. Information regarding participant selection was based on key people within the sample group.

3.2.3.2.2 Sampling frame

Figure 3.5 represents the final stage of sampling selection process. It includes the number of participants that participated in this study.

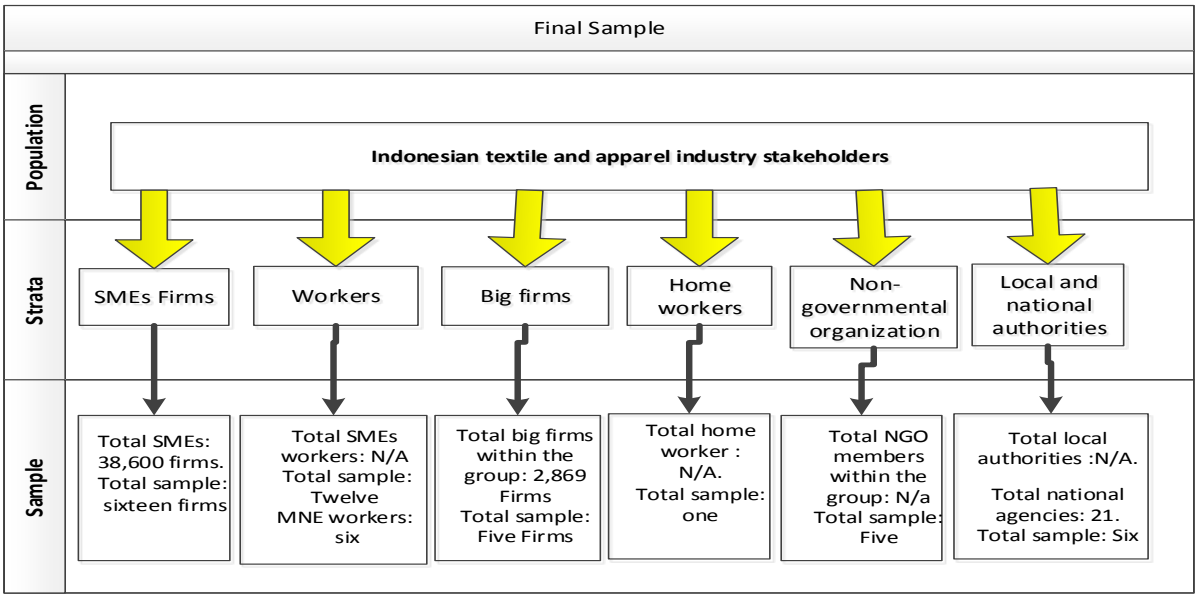

Figure 3.5 Sampling Frame

It can be seen from Figure 3.5 that fifty respondents were interviewed during the research. The respondents were divided into six groups. The research used the disproportional stratified sampling method. This means by which each group varies in terms of number of participants (Robson, 2011). Furthermore, fifteens owners of small and medium firms have been interviewed along with twenty workers from SMEs and MNEs. Six key people from government agencies, a home worker, six key people from the NGO, and five key people from MNEs have been interviewed to gain information about their perception with regard to

sustainability practices in the context of the Indonesian textile and apparel industry supply networks.

3.2.3.2.3 Field work geography

The main site location of case study was Java Island. The three cities selected cities were Surabaya, Semarang, and Jakarta and each has an international port. The degree of closeness between the textile and apparel companies and the port were important as the main forwarding export of the goods by sea. Figure 3.6 shows the case study area.

Figure 3.6 Map of Field Location

It can be seen at Figure 3.6 that the field were geographically situated on Java Island. Moreover, the majority of the textile and apparel industry in Indonesia were situated on this island. The participants reside in the three provinces namely East Java, Central Java and Jakarta, but the majority of the industry was based on Java Island (Ministry of Industry, 2012). Three provinces namely East Java, West Java, and Jakarta were selected from seven provinces on Java Island.

Five textile and apparel stakeholders including NGO, local authority, SME owners, SME workers and manager-levels of large firms reside in the Semarang Municipality, Pekalongan Municipality and Sub-Province and Surakarta Municipality, Central Java Province. Moreover, SME participants from the Surakarta Municipality were located in three Batik industrial clusters including the District of Laweyan, Kauman, and Mutihan. A number of participants from Pekalongan City live in the Districts of Kauman and Pesindon, and then interviewees from the Pekalongan Sub-Province live in the district of Wiradesa. Respondent groups namely NGO and managers from large firms were chosen from East Java Province and the Surabaya

Municipality. Four respondents from Surabaya and two participants from Semarang represent the MNE workers. Participants from the National Government Agency live in Jakarta. Lastly, two participants who work in a large apparel firm live in the Semarang Municipality, Central Java Province.

3.2.3.3 Field Verification of Theory

Pilot interviews were needed to confirm that the participant understood what being asked in the questionnaire as well as to validate the interview tools. Three participants from non-government organisations, SME workers and SME owners all consented to participate in a pilot interview. As a result, some words and passages in the questionnaire in the Indonesian Language had to be amended. The participants all had experience in their field of at least 2 years. Field surveys and informal meetings had been piloted as an approach to the prospective interviewees.

3.2.3.4 Face-to-face Interviews and Enterprise Visits

The field study was conducted from August 13–December 26, 2012. This time period included eight weeks when production was idle. The effective working days were at least thirteen weeks. A Gantt chart of the field study realisation and is presented in Appendix A. The total work hours and idle hours were 797 hours. Moreover, the total hours idle were 264 hours. Field studies at two SME batik industrial clusters were completed in 266 hours. Interview sessions with four respondents from the National Authority were completed in 62 hours. Lastly, face to face interviews with five managers from large firms including the preparation stage took 40 hours to complete. The case study Gantt chart is presented in Appendix B. Table 3.2 depicts prospective respondents approached. It shown from Table 3.2 that nine respondents did not wish to have their interview recorded. Informal meetings took place either by phone or face-to-face. In addition, informal meeting were conducted not only once but multiple times. Forty-four (44) respondents agreed to sign the consent form and supply their bio data. Interviews were both recorded and written. Each respondent had a codes to ensure anonymity and confidentiality. The design of participant' consent form was in accordance with Leeds University.

Table 3.2 Prospective Respondent's approached (Source: own illustration)

Respondent Group	Informal meeting before interview		Voice Recorded		Consent	
	Yes	No	Yes	No	Yes	No
SMEs owner	16	-	15	1	15	1
Home worker	1	-	1	-	1	-
Worker	18	-	11	7	12	6
Official authority	6	-	5	1	5	1
Non-Government Organisation	5	-	5	-	5	-
Large Firm managers	5	-	5	-	5	-

3.2.4 Data Analysis

3.2.4.1 Transcribe the Data

Once data collection was complete, the next stage was to analyse the data for further investigation. Data gathered from on-site observation and interviews were written up and then analysed to answer each research question.

3.2.4.2 Summarise Key Findings

Furthermore, the analysis data was focusing on comparing and contrasting within the case and cross case as the case study was based on two different groups of enterprises namely small to medium-sized firms and multi-national enterprises. Lessons Learned from case study include information gathered based on supply networks structure from different two group of enterprises based on size, namely MNEs and SMEs, information in regard to buyer-supplier relationship, finding in regard to existing sustainability practice, and information regarding challenges and opportunities of Indonesia textile and apparel industry.

3.2.4.3 Analyse Key Findings using Social Network Analysis Approach

Once the findings of the case studies were summarised, the next stage was to analyse similarities and differences within case analysis. Identify triple bottom line sustainability and the structure of supply networks in each individual profit organisation as a result of within case analysis. The last stage of data analysis was visualised complexity of supply networks was using social analysis approach. Furthermore, social networks analysis represent definition in detail concerning person, activities and resources in each entity of SMEs stakeholders.

3.3 Summary

This Chapter outlined the research method that was used to address the research questions. A balanced approach was selected. This included the use of qualitative methods based on data collected in Indonesia such as onsite observations and semi-structured interviews with a range of Indonesian textile and apparel stakeholders. Results obtained through the qualitative cycle were used to inform field verification of theories from literature identified in the quantitative cycle.

The next three chapters are structured against the research process in Figure 3.3. Chapter 4 describes instrument development and case study preparation. This is followed, in Chapter 5, by results from the qualitative cycle and perceptions of sustainability from the Indonesian textile and apparel industry. Chapter 6 provides results from the quantitative cycle through visualisations of Indonesian supply networks and SMEs industrial clusters using the social network analysis approach.

Chapter 4
Design of the Research Instruments

This Chapter outlines the design of the research instruments which were used to obtain real life data in the qualitative cycle. Five research instruments were created: a research protocol and four questionnaires. One questionnaire was designed for government agencies; another for non-governmental organisations; one for MNEs and SMEs worker and one for MNE owners, SME owners, and home worker. The data obtained from the case study was used to deliver information from the perspective of key respondents from the Indonesian textile and apparel industry.

Three sections are presented in Chapter 4. Section 4.1 describes case study preparation including the reason for choosing the industry as a field-case-based, and case study design. Section 4.2 presenting maps of enterprises supply networks. This Section include general information regarding participated firms include home-worker, small to medium-sized firms to multinational enterprises as well as their representatives from each firm were presented on the last Section. This information include production process of textile and apparel, batik textile and apparel production process and map the supply network which represent multinational enterprises and small to medium-sized firm gathered from production process of the goods. Section 4.3 is the summary of the Chapter.

4.1 Case Study Preparation

Two actions should be carried out prior to conducting case study. The first action was choosing the object of a case study; the second was organising the case study design.

4.1.1 The Indonesian Textile and Apparel Industry as an Object of the Case Study

The Indonesian textile and apparel industry has been identified as one of the most promising national non-oil exports. Unlike many other national manufacturing based industries that generated deficits in international trade balance, the textile and apparel export gained surplus

for decades. Apparel was considered as the dominant export goods, followed by fibres and textiles. The textile and apparel industry, together with furniture were the two biggest national non-oil exports in comparison with the other business sectors operated by SMEs.

In response to community consciousness in adopting business practice with respect to social and environmental responsibility, prominent brands customer organisations established a Codes of Conduct for suppliers. A Codes of Conduct was an obligatory action that must be adhered to by suppliers, which were mostly textile and apparel suppliers residing in developing nations. Indonesian textile and apparel firms, especially multi-national enterprises, have been adopted codes of conduct of suppliers as a compulsory action in supplying their goods to their international customer organisations. In contrast, small and medium-sized firms as the majority of national producers have been struggling to respond to negative issues regarding unethical business and environmentally friendly issues from the national and international community. In addition, the national textile and apparel industry has been demanding addressing other issues such as high labour costs in large firms, limited financial support from the banks and the proliferation of illegally imported products. These problems prompted Indonesian textile and apparel companies at risk to embrace free trade agreements with at least seventeen countries.

Examples were the ASEAN Free Trade Agreement and the China-ASEAN Free Trade Agreement. China was well known as the largest global textile and apparel exporter. The Indonesian textile and apparel firms were facing serious problems as the ASEAN Economic Community standards will be brought into effect in 2015. AEC were a free trade zone amongst ASEAN members. Textile and apparel goods from ASEAN members such as the other competitors in the global market, Vietnam, were to be embraced by the Indonesian market as well as the goods from Indonesia. The textile and apparel industry were highlighted as a good and complex example when analysing comprehensive industrial supply networks. In this industry, the majority of customers come from developed nations and suppliers reside in developing countries. Textile and apparel customers of prominent standing and principles and in turn their customers were requiring high standards in social and environmental conditions throughout the whole supply network.

This research used a single case study. Yin (2009:46) stated that designing single or multiple case studies has their own rationale. As a prominent national industry, Indonesia has complex and holistic industrial processes ranging from the fibre production process, the textile production process, and apparel production. The producers of the goods vary in terms of a

firm's size from micro firms, small to medium firms and multi-national enterprises. This industry involves stakeholders with numerous entities and organisations that vary from national and private firms, community, expert and authority.

Information from stakeholders was needed to enrich information with regard to sustainability practices and issues from different perspectives. Addressing sustainability issues in the Indonesian textile and apparel industry were not only dependent on textile and apparel firms but also linkage with commitment from stakeholders. Table 4.1 depicts Indonesian textile and apparel stakeholders and the data sought from them.

Table 4.1 Stakeholder groups and data obtained (Source: own illustration)

Stakeholder Group	Information Obtained	Data Assortment Technique
Owner of small to medium-sized firm	- Production process - Customer-supplier relationship - Sustainability practice - Drivers and challenges in sustainability practice	Field site visit, In person, formal and informal interview
Manager from Multi-national firms	- Customer-supplier relationship - Sustainability practice in accordance with codes of conduct of supplier - Drivers and challenges in sustainability practices	Field site visit In person, formal and informal interview, Approved document
SMEs and MNEs Worker	- Worker right, obligation, and working facilities - Relationship amongst workers, union, management - Perception toward sustainability on their workplace	In person, formal and informal interview
Home-worker	- Customer-supplier relationship - Perception towards sustainability	In person, formal and informal interview
NGO	- Organisation roles and agenda - Challenges in developing the organisation	In person, formal and informal interview
National Authority	- Agency roles, policy, planning, execution, and monitor and evaluation in sustainability programmes - Challenges in conducting sustainability agenda	In person, formal interview, Official documents

Validity and reliability were the main concerns in conducting case study research. Validity refers to how appropriate the indications harmonise with reality. Reliability means that the tools were consistent as it were the same and repeated in different places and situations. (Neuman 2011:208). There were tests that fit to implement them to case study design. Yin (2009:40) pointed out four tests that were adequate in conducting case study research specifically constructing validity, internal validity, external validity and reliability. Furthermore, Yin (ibid: 41) revealed a scheme to deal with the four tests as presented in Table 4.2. A number of tactics were used in this case study in order to minimise bias throughout the research cycle.

Table 4.2 Case study scheme for design assessment (Adapted from Yin, 2009:41)

Assessment	Case Study Scheme	Stage of investigation in which scheme arises	Phase implemented in this case study
Construct Validity	- Use various source of proof	Data collection	√
	- Form sequence of proof	Data collection	√
	- Appoint expert to review case study finding	Composition	**x**
Internal Validity	- Ensure elucidation building	Data analysis	√
	- Use logic model	Data analysis	√
External Validity	- Use theory in single case study	Research design	√
	- Use replication logic in multiple case study	Research design	**x**
Reliability	- Use case study instrument protocol	Data collection	√
	- Develop case study database	Data collection	√

(√ = implemented for this research; ***x***: did not implement)

It were shown in Table 4.2 that *construct validity* refers to the tools being used and operating procedures were accurate. Face to face interviews with multiple respondents in each stakeholder group and written interview result in a log book, using recorder devices, and re-writing and saving on a personal computer were applied as the construct validity test for this study.

Internal validity in explanatory case study refers to the causal relationship that definite circumstances were alleged to point to other situations. Addressing pattern matching and explanatory as case study findings were two tests of internal validity of this case study. In addition, developing theoretical framework was the other internal validity tests that were presented in this study.

External validity means constructing an area to which findings can be generalised. This study uses a single case with a number of enterprises in the Indonesian textile and apparel industry. Therefore, the questionnaires designed for this study were based on previous literature with two main key words, sustainability and supply networks. The questionnaire domain of supply networks includes customer and supplier information and their relationship. The questionnaire on sustainability refers to business values, social, environment, and outcomes of sustainability practices. *Reliability* was the means by which the operational cycles of the study can apply to other cycles. Interview protocol was developed as field work guidance in order to assurance that the case study evidence was conducted in consistency pattern. Results from pilot field work were used as the reliability test prior gathering case study evidence.

4.1.2 Organising Case Study Design

Establishing research protocol and questionnaire design are considered to be two stages that must be done prior to conducting a case study.

4.1.2.1 Research Protocol

Research protocol was designed in order to guarantee that the various stages involved in conducting surveys and face-to-face interviews with prospective respondents were reliable. It was also used to propose prospective respondents. Three documents were delivered either by

hand or by courier service to the prospective respondents. The documents included an introductory letter with a brief proposal, a letter from Leeds University and from the researcher's home institution, the questionnaire design and a letter of consent. The introductory letter in Indonesian language is presented in Appendix B. In addition, the researcher prepared documents that explained the purpose of the interviews and the procedure for arranging and conducting face-to-face interviews.

4.1.2.2 Questionnaire Design

Supply networks and sustainability were two main topics. The literature was selected in order to provide insights into the research question in regard to the phenomenon of sustainability and supply network. Questionnaire designs, with regard to organisation supply networks, were adapted from Choi & Hong (2002), Dickson & Eckman (2006), Wilhellm (2011), Jiang (2009) and MacCarthy & Jayarathne (2012); four questionnaires were designed to be developed as interviews tools. Questionnaires design in Indonesian language are presented in Appendix C.

4.1.2.2.1 Questionnaire design for MNEs managers, home-worker and SME owners

A. General Information of the company and participant

1. Please write your name
2. Please write up/describe your profession within this company in brief
3. Please write up/describe your working experience on this field industry in brief
4. Please describe firm's ownership
5. Please describe the enterprise's history in brief.

B. Supply and Demand Networks

a. General Issue:

1. Please identify the raw materials which were used
2. Please identify the end-product
3. Please explain the production process of these goods.

b. Customer Information:

1. Please identity customer organisation (agent, end-customer, retailer)
2. Please identify the customer organisations
3. Please identify how many customer organisations the firm has
4. Please identify the customer geography
5. Please explain the procedure for awarding a contract
6. Please identify the criteria that the firm must fulfil to be awarded a contract
7. Please confirm the length of time it took to award a contract
8. Please confirm the length of the contract awarded
9. Please explain the procedure of the auditing process
10. Please explain any problems during the contract period and how these problem can be resolved
11. Please identify the length of the working relationship with the customer
12. Please explain how much influenced your company had in the decision-making process for awarding the contract.

c. Supplier Information:

1. Please identify the supplier organisation
2. Please identify the parts the firms supply to the customer
3. Please identify how many suppliers the firm has
4. Please identify the supplier geography
5. Please explain the supplier selection process
6. Please identify the supplier criteria
7. Was there focal company (customer) interference in the supplier selection process?
8. To what extent did the focal company (customer) participate in the operation of suppliers?
9. Please explain the procedure of the auditing process
10. Please explain any problems during the contract period and how these problem can be resolved
11. Please identify the length of the working relationship with the customer
12. Please explain how influenced your company in decision-making process for awarding the contract.

C. Sustainability

1. Please identify and explain the firm's strengths in terms of sustainable business
2. Please identify and explain what economic sustainability is
3. Please identify and explain what social sustainability is
4. Please identify and explain what environmental sustainability is
5. Please rank the importance of social, economic and environmental sustainability (1 being most important and 3 being less important) and the reasons for choosing these priorities
6. Has the firm received any sustainability awards? If so, please identify the sustainability standard certificates (local or international)
7. Has practicing sustainable management affected the organisation's profit?
8. Please explain the challenges to becoming more sustainable
9. Please explain any ways of improving sustainability practice
10. Please explain the roles of any companies, NGOs, or governments in initiating, disseminating, and socialising the practice of sustainable business for the organisation.

4.1.2.2.2 Questionnaire design for worker

A. Participant Background:

1. Please write your name
2. Please write up/describe your profession within this company in brief
3. Please write up/describe your working experience in this industry in brief
4. Please describe the firm's ownership
5. Please describe the enterprise's history in brief.

B. Information regarding worker's obligation and right

1. Please explain the process of becoming an employee
2. Please identify the employee obligations to the company
3. Please identify the employee's rights in relation to the company
4. Please explain your working facility
5. Please identify any equipment and procedures regarding health and safety that are used of applied during working hours

6. Please confirm your wage standard and has there been any action to increase the wage
7. Please identify whether the wage is above or below local minimum wage
8. Were there any promotions, benefits, training, or social welfare associated your employment?
9. What kind of conflict management and resolution is there either between the organisation and the worker or between workers?

C. Sustainability

1. Do you have any thoughts about how the owner could manage sustainable business?
2. What is your opinion of economic sustainability?
3. What is your opinion of social sustainability?
4. What is your opinion of environmental sustainability?
5. Do you think the company gives their workers' rights such as a fair wage, good working conditions, promotions, training, health insurance, conflict management, and pensions?
6. Please rank the importance of social, economic and environmental sustainability (1 for most important and 3 for least important) and what are the reasons for choosing these priorities?

4.1.2.2.3 Questionnaire design for Non-Government Organisation

A. General Information:

1. Participant Background:

a. Please write your name
b. Please explain in brief your role at the organisation

2. Please explain the organisation's history in brief
3. Please explain membership registration and requirements, and any advantages of being a member of the organisation
4. Please explain the interdependencies of the organisation
5. Please explain any issues in terms of sustainable business

6. Please explain the organisation's planning programmes, the way planning and programme audits are disseminated
7. Please explain the organisation's actions in terms of management conflict, not only amongst its members but also between members and the organisation's stakeholders
8. What kind of challenges are there to the development of the organisation and how can they be overcome?

B. Sustainability

1. Please identify and explain issues and factors relating to maintaining sustainable business amongst members of the organisation.
2. Please identify and explain what economic sustainability is.
3. Please identify and explain what social sustainability is.
4. Please identify and explain what environmental sustainability is.
5. Please rank the importance of social, economic and environmental sustainability (1 for most important and 3 for least important), and what are your reasons for choosing these priorities?
6. What is the role of NGOs in disseminating sustainable business?

4.1.2.2.4 Questionnaire Design for National and Local Government Agency

1. Participant Background:
    a. Please write your name
    b. Please explain in brief your role at the organisation
    2. Please explain the organisation's history in brief
3. Please identify and explain any sustainability issues in term of sustainable business
4. Please identify and explain your organisation's policies, strategies and programmes in terms of sustainability
5. Please explain the process of programme dissemination
6. Please explain the organisation's monitoring and auditing of these programmes
7. Please identify and explain the barriers and challenges in disseminating the programme.

4.2 Map of the Indonesian batik and apparel enterprises supply networks

Ten maps of the Indonesian textile and apparel enterprises were presented. The maps include five maps of multi-national enterprises, a map of home-worker, and four maps of batik textile small to medium-sized enterprises.

4.2.1 General Information of Participated Firms and Respondents.

The participating firms represent the textile and apparel industrial sectors such as yarn, mid-stream textiles and downstream apparels. Table 4.3 presents general information regarding each respondent and the firm.

Table 4.3 General Information from five participating MNEs and their representatives (Source: Unpublished documents and Oral source, 2012)

Respondents' Occupation	**Firm ownership**	**End-product**	**Production Capacity**	**Year establishment**	**No. of workers**
Director Operation	Sole ownership, local investment	Textile, Apparel	N/a	2011	8 00
General Manager	Foreign direct investment	Apparel	400,000 pieces / month	1998	3,200
Human resource & General Affair Senior Manager	Foreign investment	Yarn, embroidery, Non-woven	Yarn= 36,972,200 lbs. per year Embroidery=1,840,000 yards / year Stitch-bond non-woven =3.000.000 meters/year	1975	1,200
Personnel & Compliance Manager	Joint venture	Apparel	300,000 clothes/month	2002	2,000
Deputy General Manager	Solely ownership, local investment	Yarn, textile, apparel	Yarn=136,050 tons/year Textile=240,000,000 yards/year Apparel=30,000,000 clothes/year	1966	25,000

It can be seen from Table 4.3. that the five participants were manager-level. Each manager had at least two or more years' experience in the textile and apparel industry. Four respondents have at least fifteen years' experience in the apparel and textile industry. The primary product of the firm were fashion apparels with product varieties such as men shirts, apparel for children, jeans, jackets, and uniforms. Two firms produce yarns and textile. A firm produces outdoor equipment include tents, bedding, sleeping bags, travel bags, helmet covers and footwear. The others were an up-stream and mid-stream textile producer. The firm produces spun yarn, non-woven, and embroidery textiles. Furthermore, spun yarn produced were raw material for fire hose firms and textile companies. Non-woven goods include shoes and jacket inner linings, curtains. In terms of the company ownership, two firms were local family businesses and the least three have direct foreign investment. Moreover, one firm were a direct foreign investment company established in 2002. The firm has joint venture firms with apparel firms in India,

China, Bangladesh, and Cambodia. The group has marketing offices in Germany, Holland, the U.S, Hong Kong, Bangladesh, China, India, and Indonesia.

There were seventeen respondents whom participated in face to face interview. Sixteen respondents were the owners of enterprises. The firm size varied from small to medium in size. One respondent were a home worker. In terms of firm size, the owner of two small firms and fourteen medium firms were interviewed. In addition, a home worker who supplies apparel products were also interviewed. Figure 4.1 represents information on these firms.

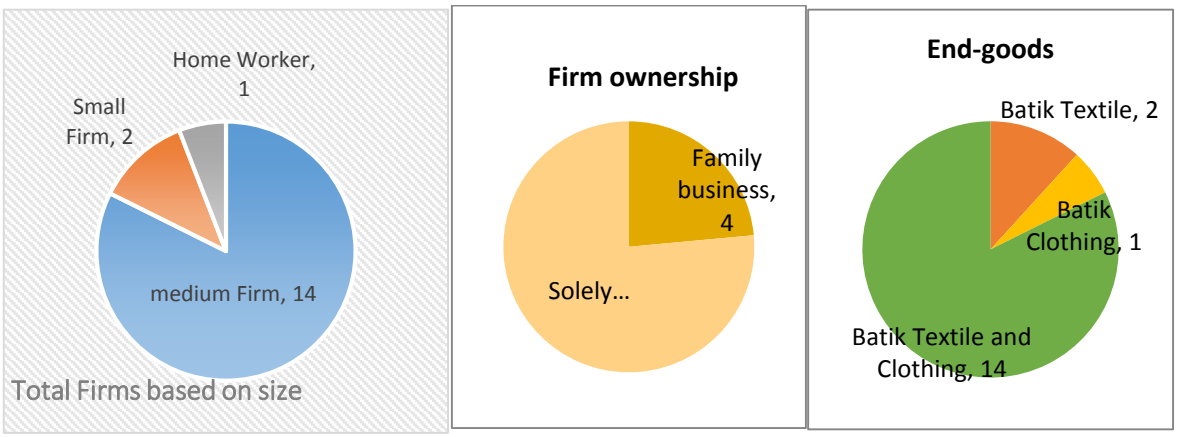

Figure 4.1 Information about the SME firms and the owners

It can be seen from Figure 4.1 that the firms were small business and fourteen firms were considered as medium-sized businesses. In addition, one firm were considered as a home worker who supplies apparel products to a large company. Four firms were family businesses and thirteen enterprises have single owners. The seventeen companies' end-goods were textiles and apparel. Two firms were Batik textile producers, one firm producing Batik apparel and fourteen firms producing both Batik textile and apparel.

4.2.2 Production Process of Textile and Apparel Big Firm

Information about production processes were needed in order to map supply and demand networks. The production process was highlighted to reveal information flows including raw material, quality assurance, and finished product. Figure 4.2 depicts the textile to apparel production process. It can be seen from Figure 4.2 that the end product includes yarn, grey textile, fabric, and apparels.

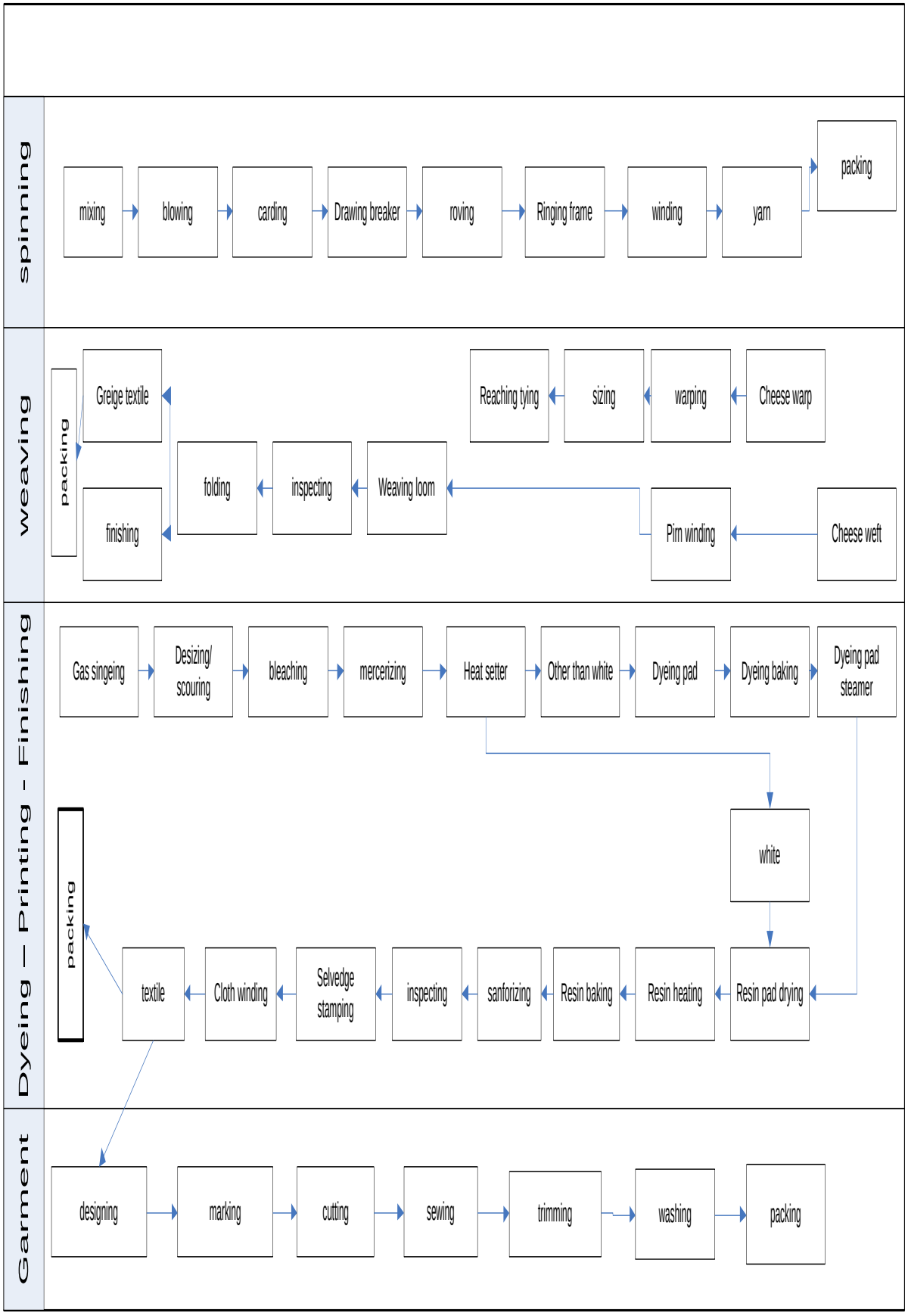

Figure 4.2 Textile and Apparel Production Process in MNEs (Source; own illustration)

4.2.3 Information with Regard to Production Processes of Batik Textile and Apparel SMEs

The majority of firms' end goods were Batik hand painting and Batik stamping. Thirteen firms' end goods were Batik painting, Batik stamping and Batik mixing of the two techniques. Batik process production is shown in Figure 4.3. To finish a piece of hand painted Batik takes two to six months. Silk and cotton were considered as the main fabrics in creating hand painted Batik. The first stage of hand painted batik were loosening the fabric for a while, and then cutting the fabric into pieces. After that, pieces of the cloth were soaked in deep water for a shrinkage test. The shrinkage test were needed for both silk and cotton textiles. Drying the cloth was the next step. Once it was dried, the next stage was the fabrics were dipped in boiling water that were mixed with chemical stuffs and starch in order to bleach the fabric. The result of the process was the fabrics were whiter and it was easier to attach the dye-resistant wax. Then the fabric were dried and folded up to make it limp.

The next process was to draw the Batik pattern on the fabric by placing the piece on the patterned paper in order to copy the Batik patterns. The next stage was the fabric being hand-written by means of painting the fabric with wax using a Batik painting tool called a canting to cover the pattern. The next stage was dyeing the fabric using chemical or natural dyes. The next stage was painting the fabric with wax using a canting and then dyeing the fabric into different colours. The painting and dyeing process were repeated several times until the piece of fabric reached desired motif and colour.

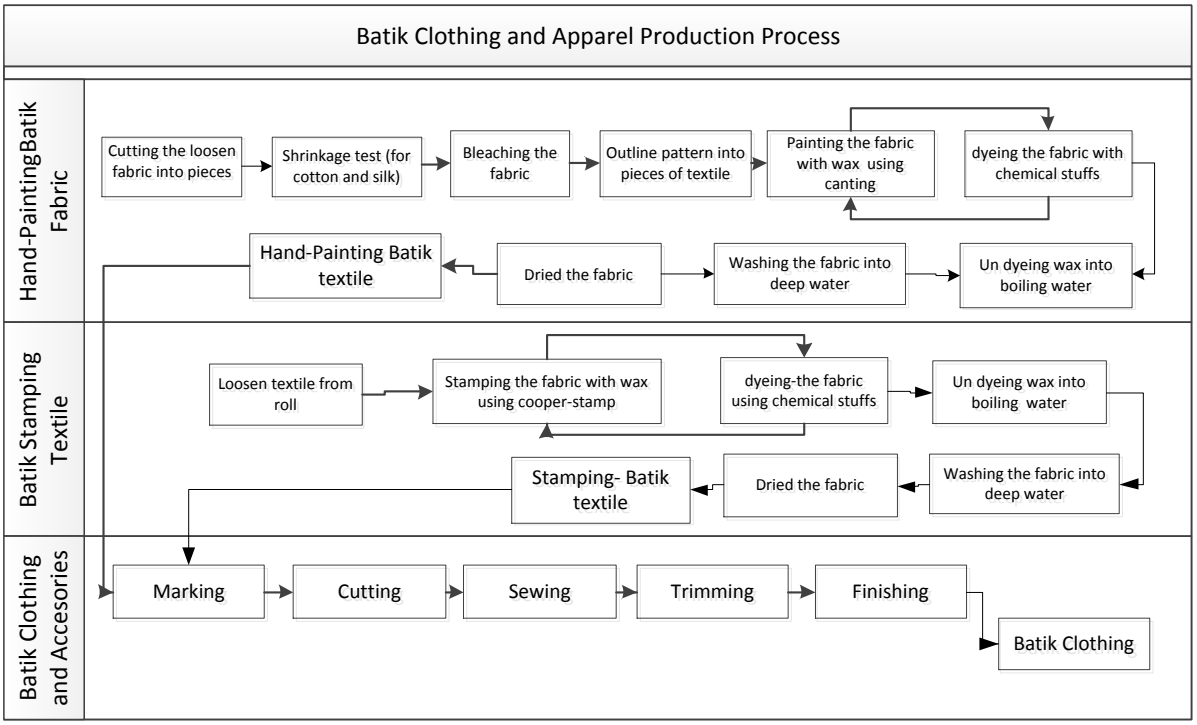

Figure 4.3 Batik textile dyeing and apparel production process in SMEs (Source: own illustration)

The next process was un-dyeing wax by dipping the fabric into boiling water. Finally, the fabric was washed in the dipped water and then the fabric was dried in places that were not exposed to direct sunlight. Once the Batik cloth was dried, it were folded and kept for at least one day. The Batik textile were then labelled as Batik hand-painted and could be either sold as a Batik textile or made into Batik style apparel.

The production process of Batik stamping was shorter than that for hand painted Batik cloth. The first stage was loosening the fabric for at least six hours. The next phase was stamping wax onto the fabric using a copper stamp. The copper stamp was 20 cm x 20 cm and the weight was 600 grams on average. The next stage was dyeing the stamped-fabric in a chemical or natural liquid. These processes were done simultaneously. Once the fabrics has all the motifs and were of the desired colour, the next stage was placing the un-dyed wax into boiling water and then washing the fabric in deep water. Finally, the fabric were dried and then exposed to indirect sunlight, and then the Batik were stamped and rolled into a cone. The Batik stamped textiles were sold either as Batik textiles or made into Batik apparel.

The production process of Batik apparel began with making the fabric. The next step were cutting the fabric to the pattern and then sewing the fabric. Once the sewing were done, the next stage were trimming the fabric, include tagging the fabric with Batik hand printing, Batik stamping, or a combination of stamping and hand painting.

One respondent has been establishing a small-scale Batik textile firm which focuses on supplying goods to a number of textile and apparel export companies. The production process of Batik textiles was slightly different from the known Batik textile process. Figure 4.4 presents the production process of Batik textiles.

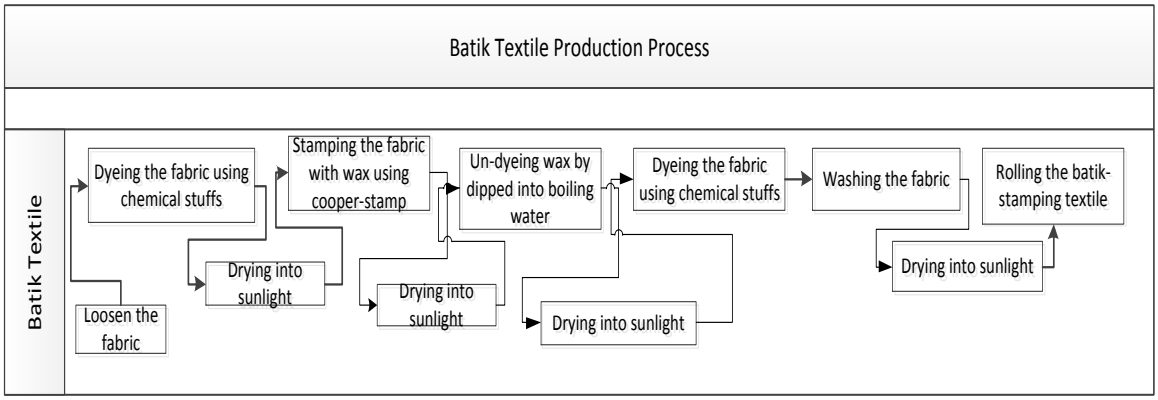

Figure 4.4 Batik Textile Production Process of small-sized firm (Source: own illustration)

It can be seen from Figure 4.4 that the first stage were loosening the fabric for at least six hours. The next step was dyeing the fabric in chemical liquid. The result of the process was to add basic dye to the fabric. Exposing the fabric into the sunlight for 20 minutes were the next stage. Once the fabric dried, stamping the fabric with wax using a copper stamp with the desired motif were the next step. Then the fabric was exposed to the sunlight for no more than ten minutes. Un-dyeing wax by dipping the fabric into boiling water was the next stage. After the de-waxing stage, dyeing the fabric into chemical liquid to gather different colours were the next stage and then followed by washing the fabric in water. Exposing the fabric into the sunlight for at least twenty minutes were the final stage. The Batik cloth can then be rolled into a carton cone and delivered to the customer.

A respondent who represent the owner of apparel home worker has been working on this field for at least ten years. Figure 4.5 shows the production process of Batik apparel.

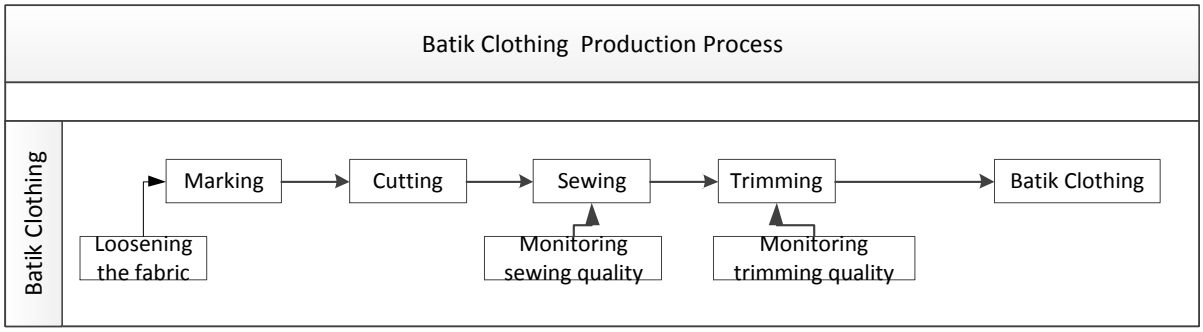

Figure 4.5 Batik apparel production process of home worker (Source: own illustration)

The first stage of the production process began with loosening the fabric, then patterning the fabric and then cutting the fabric using a semi-automatic textile cutter. Sewing the pieces of fabric together was the next stage. During this stage, controlling the sewing quality was very important as their customers require high-quality sewing for the end product. After that, trimming the fabric includes sewing on any buttons or zips and tagging the correct label onto the apparel. The trimming process were considered as a crucial stage as with the sewing. The final stage was folding the finished goods to deliver to the customers.

4.2.4 Map of Textile and apparel Multi National Enterprises Supply networks

Once the production process was established, the next stage was mapping the supply network structure. Figures 4.6 to 4.10 illustrate information concerning firm supply networks. Three classifications portray information about the supplier, the firm, and focal company. The information flow was based on a firm's production process.

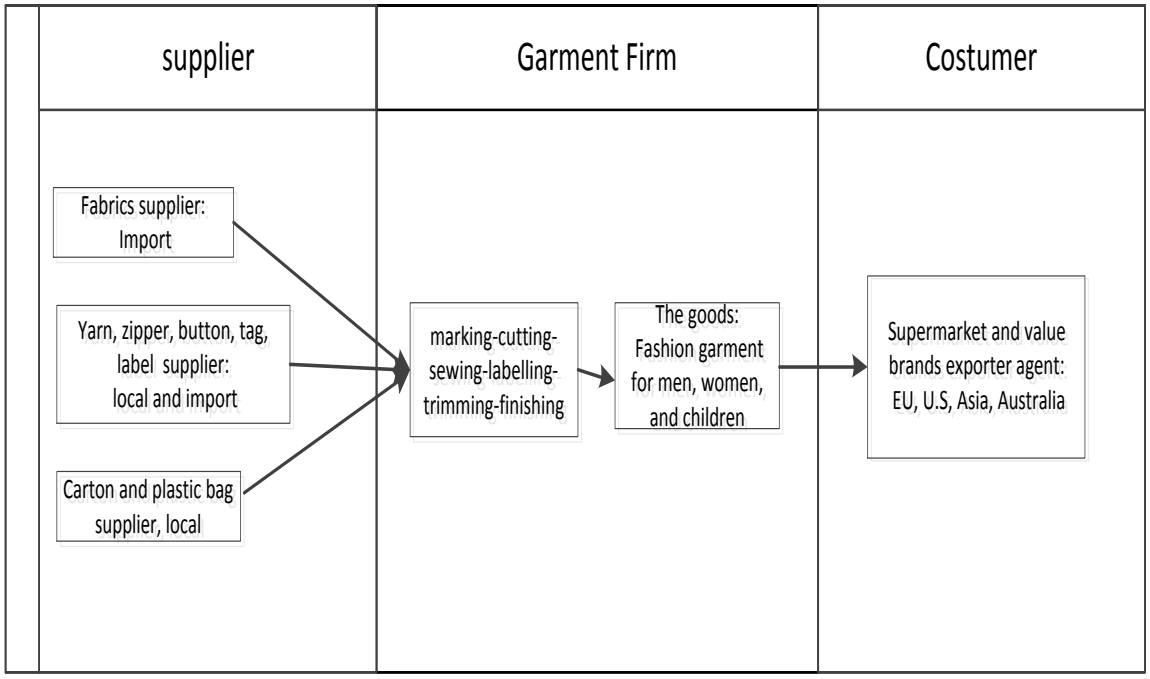

Figure 4.6 The MNE A's Supply networks (Source: own illustration)

It can be seen from Figure 4.6 that Firm A is an apparel supplier for overseas buyers. According to interviewees, fabrics as the main raw material were imported from China. In addition, apparel accessories goods were imported or local. Cartons and plastic as packaging materials were purchased from local suppliers. Once the production process were completed, a freight forwarder delivers the goods to supermarkets and value brand firms in a number of countries in the European Union, the U.S, Asia and Australia. The firm confirmed that the customer bought the goods through an export agent.

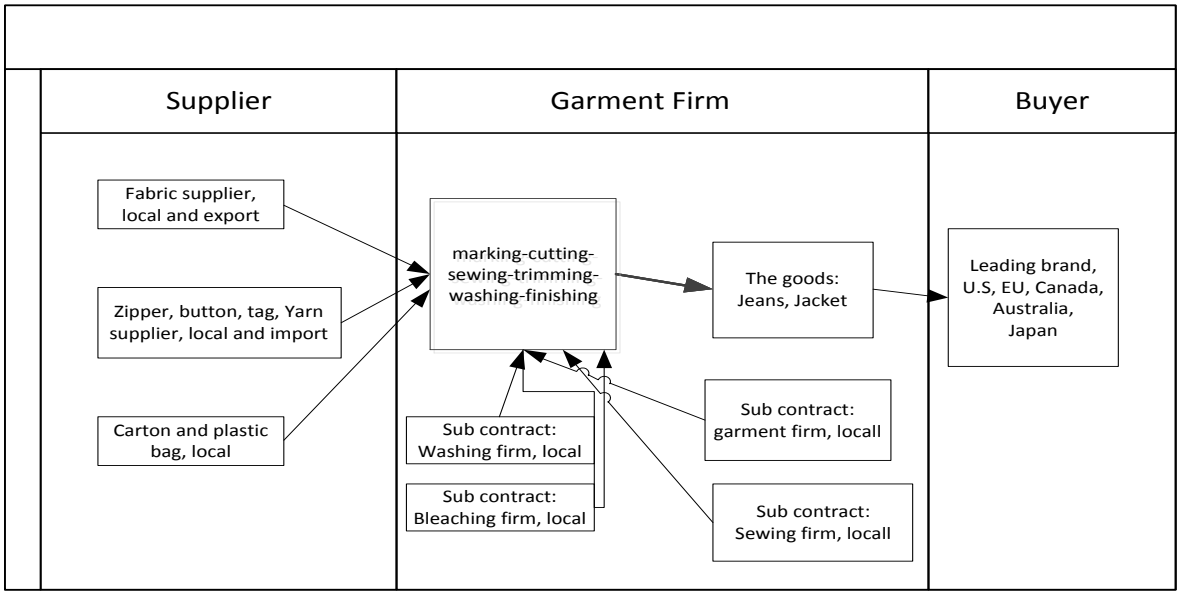

Figure 4.7 The MNE B's Supply Networks (Source: own illustration)

Figure 4.7 shows Firm B's supply networks. Firm B's supply network was somewhat different in terms of the production process flow. Firm A outsources production jobs such as washing, sewing, tailoring, and bleaching. Furthermore, customers were located in a number of countries worldwide. The customers were prominent brands from four continents.

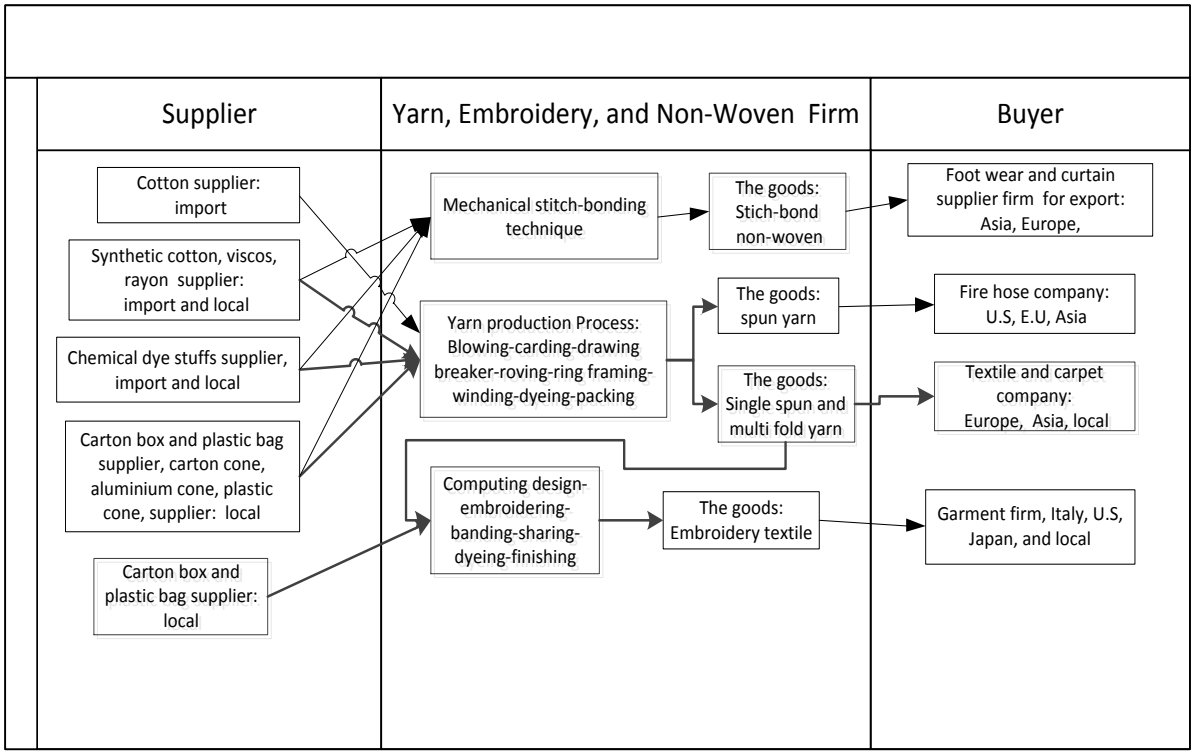

Figure 4.8 The MNE C's Supply Networks (Source: own illustration)

Figure 4.9 and Figure 4.10 represent firm C and firm D's supply networks respectively. Firm A were a yarn, non-woven and embroidery producer.

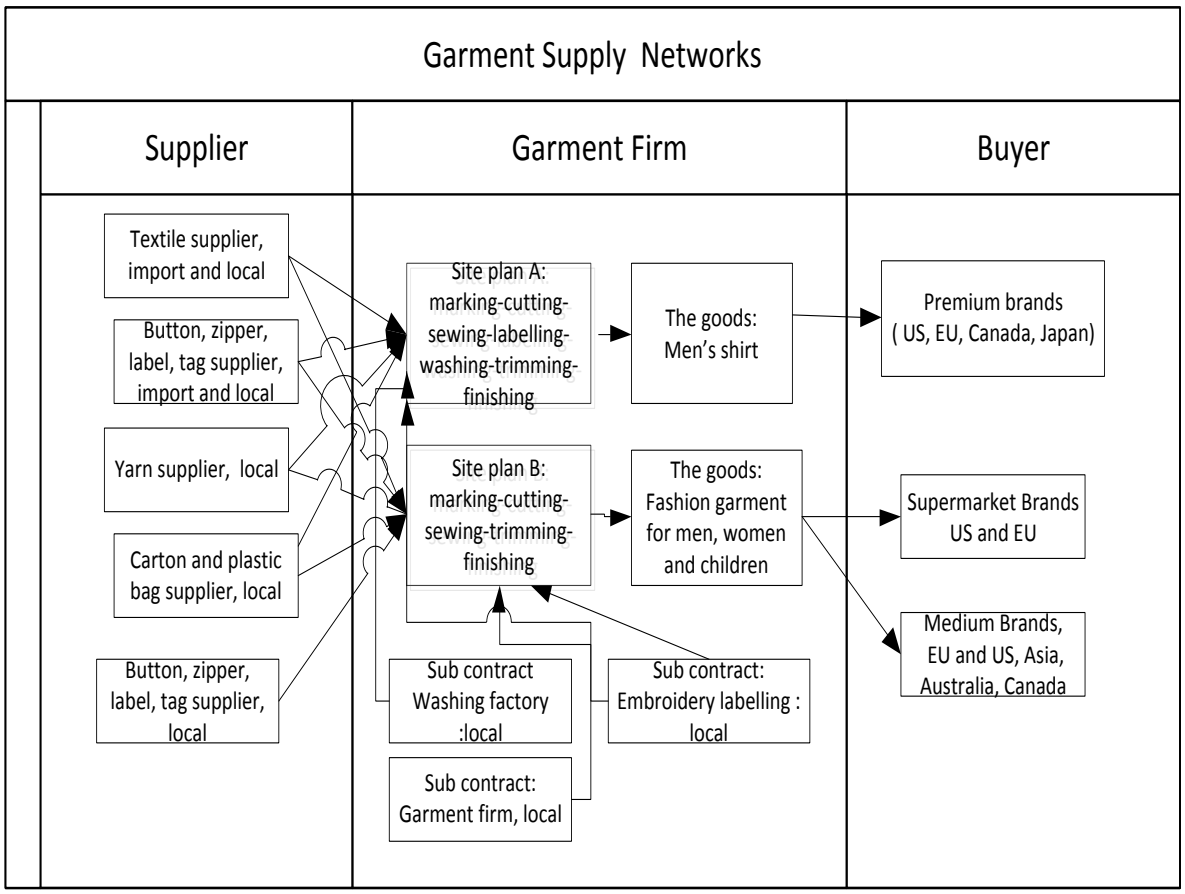

Figure 4.9 The MNE D's Supply Networks (Source: own illustration)

Firm D is an apparel producer for premium and supermarket brands in developed nations. Cotton, as main raw material in the yarn production process were imported as polyester, chemical stuffs and viscose. In addition, additional raw materials were supplied locally. Customers of the firm include a fire-hose company, a fabric firm, and a footwear company either overseas or local.

Figure 4.10 provides information about the supply networks of firm E. The goods of firm E include yarns, non-woven fabric, textiles and apparels. Cotton and fibre raw materials were imported and some were sourced locally.

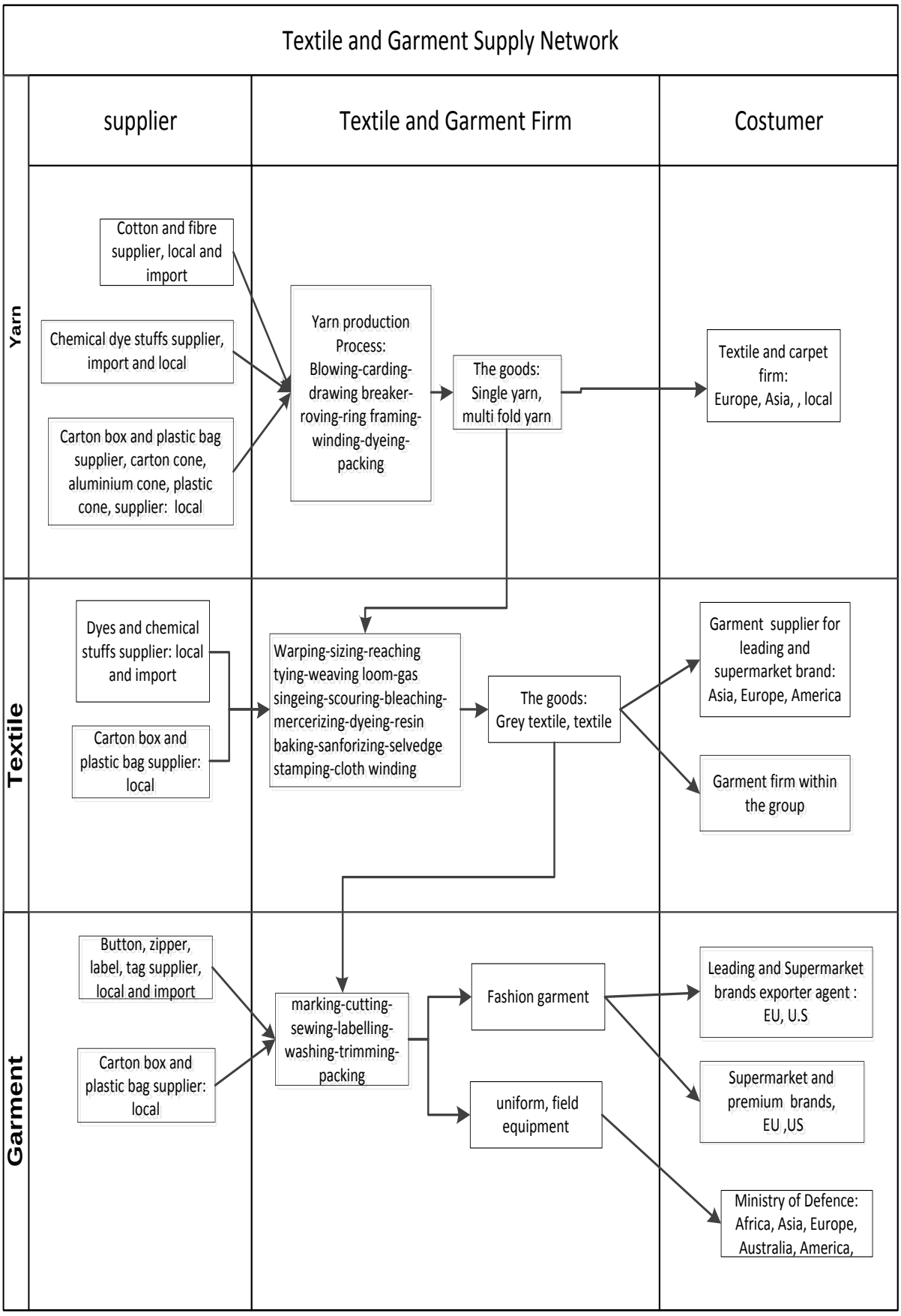

Figure 4.10 The MNE E's Supply Networks (Source: own illustration)

4.2.5 Supply Networks of Batik Textile and Apparel Small-to-Medium-sized Enterprises

Six different supply networks were identified in order to map supply networks. The supply networks include apparel home workers, small-scale Batik apparel, medium-scale Batik exporters, small scale Batik textile suppliers, medium scale Batik textile and apparel and medium scale Batik textile and apparel exporters. Figure 4.12 depicts supply networks of a medium scale Batik firm. The supply networks represent 11 out of 17 firms and home workers which participated in the research. Medium scale firms were considered as focal Company through the supply networks. In terms of supply, there were suppliers who delivered raw materials and the buyers took the part of the customer receiving the goods.

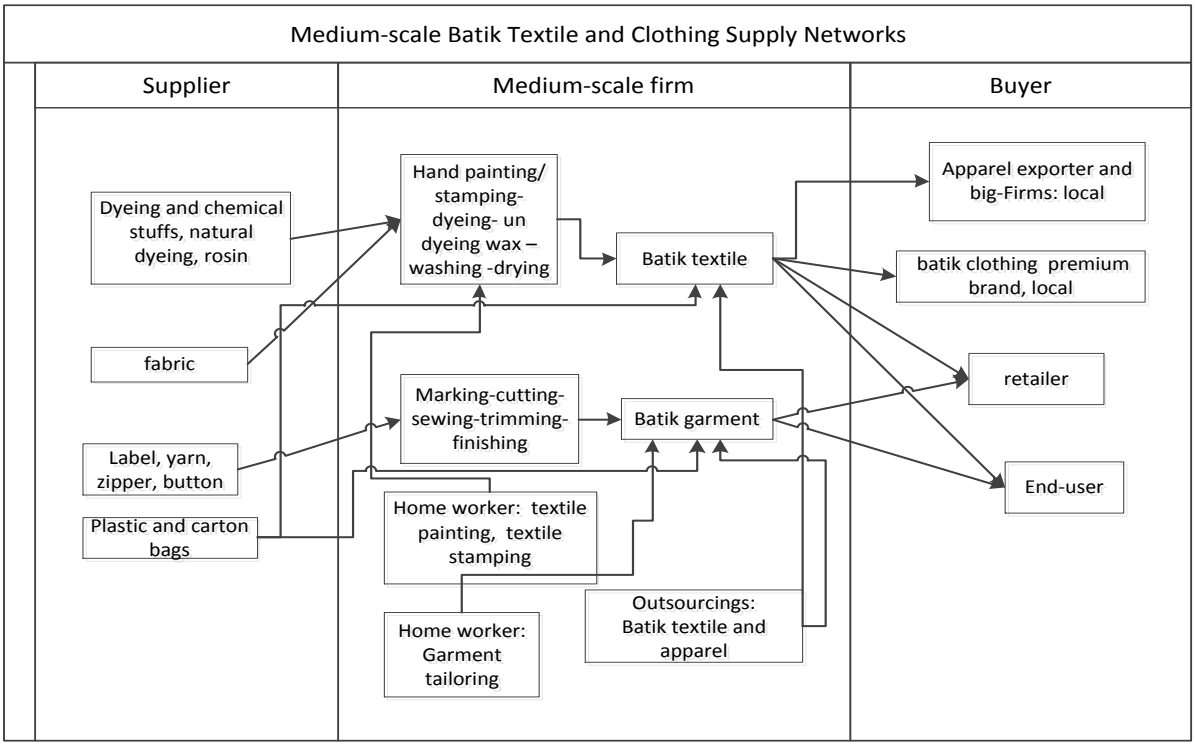

Figure 4.11 Supply networks of Batik textile and apparel SMEs (Source: own illustration)

It can be seen from Figure 4.11 that these Batik firms connected with their first-tier supplier. Fabric supplied by re seller or broker and the firms did not buy directly from the textile manufacturer. The majority of business owners testified that they bought their fabrics from a broker as it were cheaper than buying directly from the textile producer. Suppliers of chemical dyes were sourced from a chemical retailer close to the firm. Chemical stuffs were considered

as export products. Rosin and natural dyeing were bought locally. The business owners explained that their suppliers were responsible for delivering the raw materials. Figure 4.12 shows the supply network of a small Batik firm.

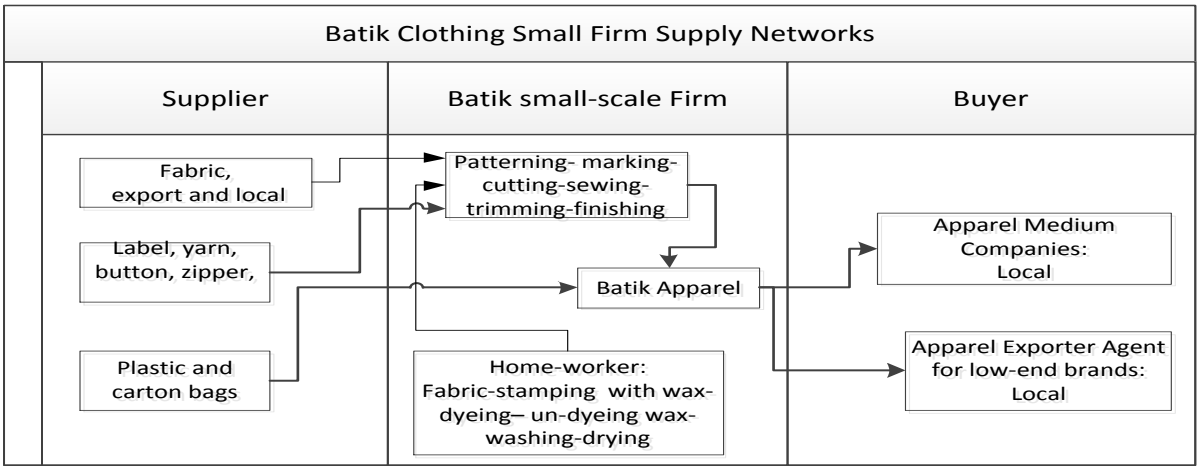

Figure 4.12 Supply networks of a small-sized firm of Batik apparel (Source: own illustration)

It can be seen in Figure 4.12 that raw materials came from local suppliers. Home workers supplied the Batik fabric. Once the Batik fabric were supplied, the stages of making the apparel including patterning, marking, cutting, sewing, trimming and packaging were all carried out by the firm. Local medium sized firms as well as export agents for low-end brands bought the end goods. Figure 4.13 shows the supply network of a medium sized firm that export their end goods.

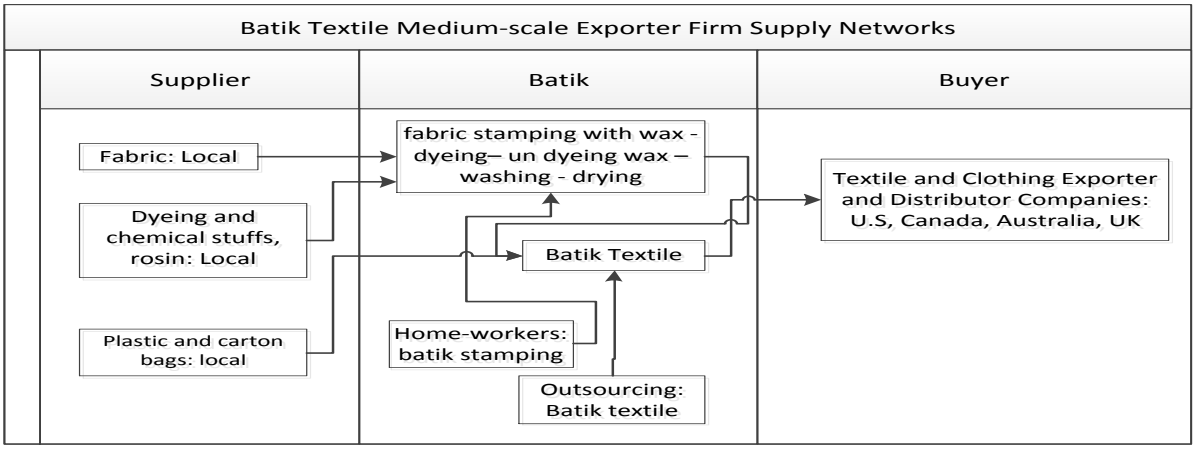

Figure 4.13 Supply network of a medium-sized firm of Batik textile exporter (Source: own illustration)

Small firm supply networks represent on Figure 4.14 that the fabrics have been supplied by focal company. Additional raw materials such as yarn, button, and zipper were supplied from local suppliers. The production processes include marking, cutting, sewing and trimming had done by the home workers. The apparel then delivered the goods to the focal company.

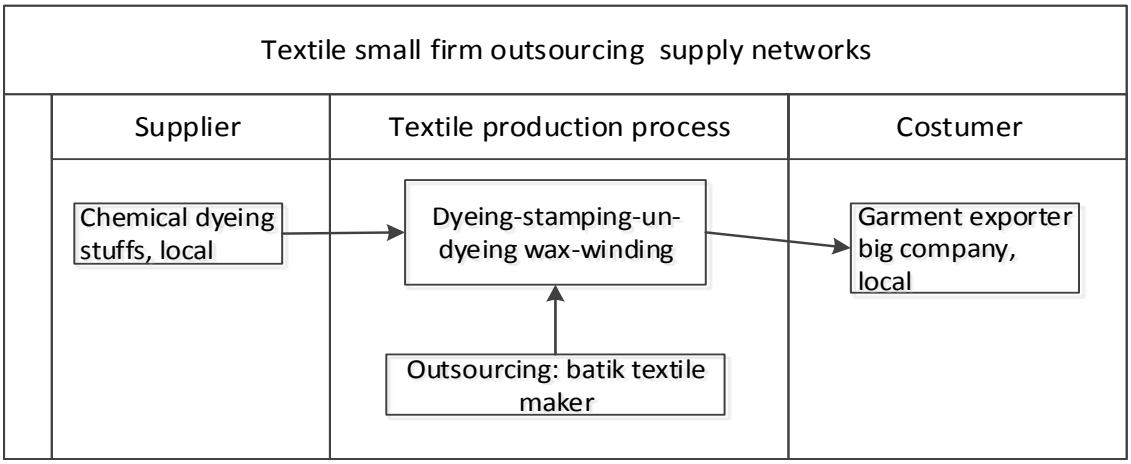

Figure 4.14 Supply networks of a small-sized firm outsourcing to local apparel exporter (Source: own illustration)

It can be seen on Figure 4.15 that the raw material in textile in white was supplied by the focal company. Chemical dyeing stuffs supplied by the local chemical shop. Batik production process was the next steps that had done by the home workers. Once the batik production process done, the batik textile delivered to the customer.

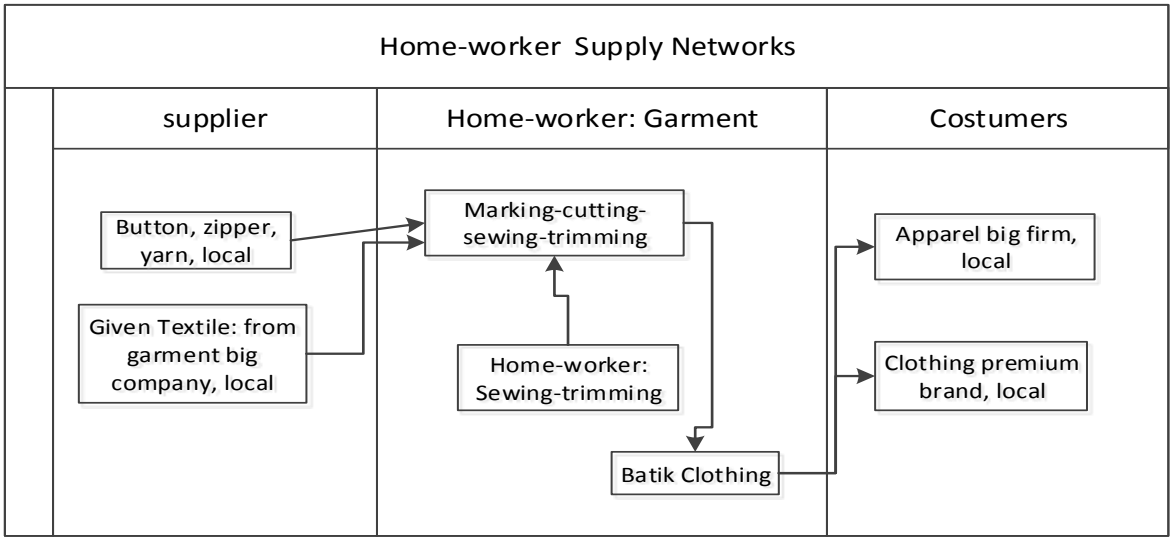

Figure 4.15 Supply networks of batik apparel home worker (Source: own illustration)

Tailor artisan supply networks represent on Figure 4.15.The fabrics were supplied by focal company. Additional raw materials such as yarn, button, and zipper were supplied from local suppliers. The production processes include marking, cutting, sewing and trimming had done by the home workers. The apparel home worker then delivered batik apparel to the focal company.

4.3 Summary

This Chapter described the design and development of research instruments used to conduct on-site visits and face to face interviews in the qualitative research cycle. Six stakeholder groups were distinguished: MNE owner, SME owner, home-worker, government agency, worker and non-governmental organization. The research instruments were a research protocol and four questionnaires. The research protocol was designed to ensure consistency across the interviews. Four questionnaires were designed as tools for use in conducting semi-structured face to face interviews with stakeholders.

Ten supply networks were analysed and mapped in accordance with the production process of the end goods. The actors and organizations within them included five multi-national enterprises, a home worker, and seventeen small to medium-sized enterprises. The supply network maps were based on process maps of the end products. This enabled this visualisation of the supply networks and identification of participants for the qualitative research. Key results of perspectives on sustainability from sixty one respondents and key learning points from six respondent groups are detailed in the next Chapter, Chapter 5.

Chapter 5
Result Perspective of Sustainability from Indonesian Textile and Apparel Stakeholders

This Chapter reports results from the qualitative cycle of the Indonesian textile and apparel industry. Two key points, information about suppliers and customers and sustainability practices, are captured from six groups of the stakeholders. Lessons learned are derived from semi-structured interviews using questionnaire tools in order to gather information on supplier-customer relationships among organizations of the Indonesian textile and apparel enterprises. The structure of Chapter 5 is presented at Figure 5.1

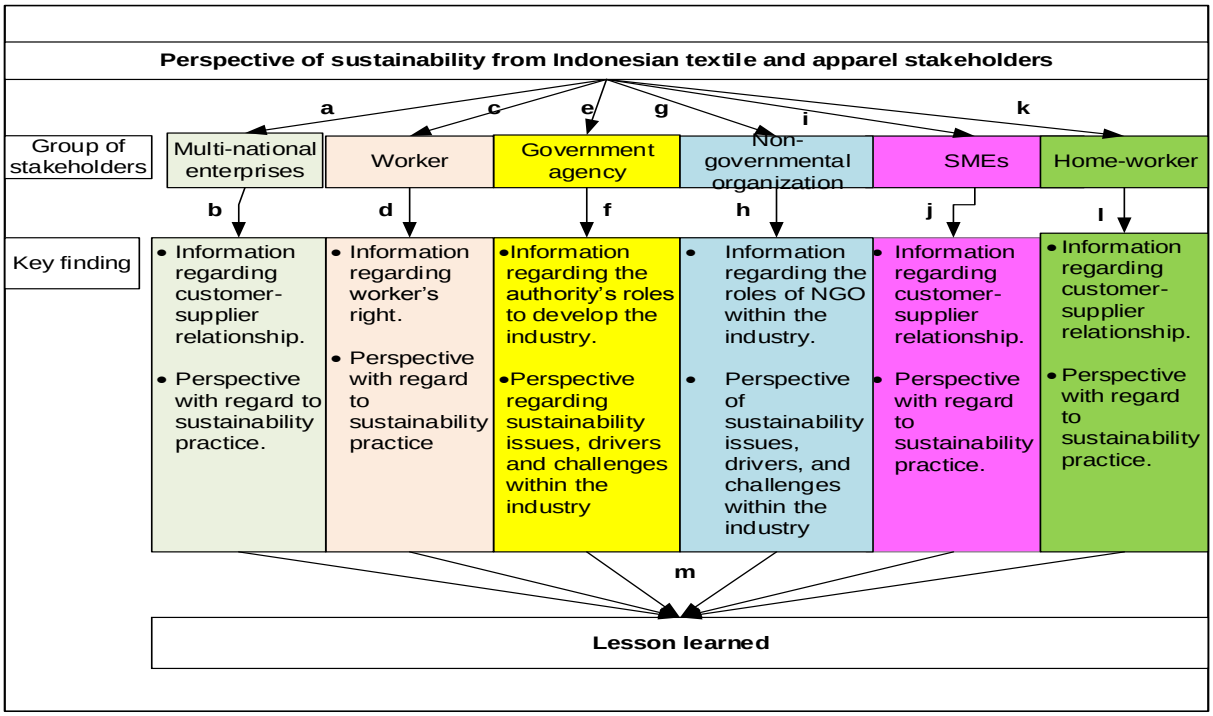

Figure 5.1 The structure of Chapter 5

It can be seen from Figure 5.1 that in order to understand perspective of sustainability from the Indonesian textile and apparel industry, information from six respondent groups: multi-national enterprise, a; worker, b; government agency, c; non-governmental organisation, d; SME, d; and home-worker, k, are obtained. As a result of key finding from respective stakeholder group that

are presented at b, c, d, e, f, g, h, j and k then are summarised to m, lesson learned from the key finding of the study.

Seven sections were presented in this Chapter. Section 5.1 summarize key finding from multi-national enterprise stakeholder group. The Section consists of four sub-sections: 5.1.1. and 5.1.2 depict information regarding customers and suppliers, Section 5.1.3 presenting information regarding sustainability practices and key learning from the stakeholder group are summarised in Section 5.1.4. Key finding from perspective of MNE worker group and SME worker group are presented in Section 5.2 and 5.3. In addition, Section 5.3.1 represent key learning from interview with MNE worker and followed by key learning from interview with SME worker is presented in Section 5.3.2. The next Section is gathered finding from interview with both local and national government agency and then followed by key learning from interview with government agency is presented in Section 5.4.3. Further exploration regarding key finding from non-governmental organisations are presented in Section 5.5 and then followed by key learning from the stakeholder group is presented in Section 5.5.2. Section 5.6 provides information gathered from key finding from SME owner and home worker. This Section including Section 5.6.1 provide information in regard to customer requirements and then continued to Section 5.6.2 provide information about supplier. Section 5.6.3 depict information in regard to sustainability management practices and followed by key learning from the case study is described in Section 5.6.4. Summary is presented in the last Section, 5.7. General information of participants is presented in Appendix D1.

5.1 Key Finding from the Indonesian Textile and Apparel Multi-national Enterprises

Case study evidence gathered from survey on field site firms and face to face interviews using questionnaire tools with five respondents whom appointed in top-management level from five different multinational textile and apparel companies. There were two groups of information were gathered to highlight research question presented above. The earlier were informed with regard to supply networks with a focus on customer supplier relation and the later were learnt regarding sustainability.

5.1.1 Information about the Customers and their Requirements

Customer information including customer's information was presented in the Appendix D2. Findings with regard to customer's requirements were presented in the following order: In terms of customer geography, the U.S was considered as the major customer of the firm's goods. Four respondents stated that their main export customer was from the United States. Respondent A stated that the customers of their goods were export agents for supermarkets and value brands. The customer agent offices were located in Indonesia, Singapore, Malaysia, China, and Taiwan. Respondents B and C stated that their customers were companies that import the product without an agent. Company E exports their goods either via an export agent or directly to the customer. The period of contract varies from 1 month as the shortest to 6 months as the longest.

In general, the contract procedure was started with either a quotation from prospective customers or by quotation from textile and apparel firms. The quotation from customers includes a sample product. The next stage was the respondents' firm send a sample to their customer. At this stage, the customer calls for testing of the sample. The customers appoint a third party to conduct sample testing. Once the sample testing was approved, the next stage was initial audit of the supplier's site plan. The audit was led either by a third party or by an internal focal company auditor. The initial audit aims to assure the company that the supplier was complying with the Codes of conduct of the Customer. Furthermore, Respondents A, B, C and D stated that the auditor was independent and professional in their field. The audit process includes document verification, inspection of the site and interviews with random workers to validate document sheets. Respondents B and D informed that the long-term relationship between auditor and the respondents was not affected by the objectivity of the audit result. Respondent D informed that the first time the audit teams approached the site plan, the respondent must sign a letter of confirmation that during the auditing process, the firm was restricted to provide food and any other gift to the auditor. The audit date was random prior to a supplied range of inspection dates.

The audit results were classified into three categories: the first was that the firm's business practice complied with the Codes of conduct, the second was the supplier needed to arrange for improvements in order to comply with the Codes of conduct. Furthermore, the supplier must carry out improvements according to the audit results and then the audit team must verify the improvements had been made. The last category was that if the supplier fails to comply

with the Codes of conduct it means that the supplier lost their opportunity to continue to the next stage. The next stage was negotiation of price and delivery time. It was rare that any problems would be encountered in negotiations at this stage. Furthermore, respondent D stated that there was opportunity to fail to reach agreement after customers' site visit. Once the contract was signed, the next stage was producing the goods. At this stage, a second audit was carried out. Respondents B, C, and E confirmed a number of customers allocated an internal auditor to visit the supplier's factory daily. The auditing process at this stage was continuous until the period of the contract was finished. Moreover, five respondents stated that the same procedure would be repeated in order to obtain a new contract either with the same customer or with new customers. In terms of the length of relationship with the supplier, the shortest was one year as confirmed by respondent A. Interviewee A stated that the firm was established last year.

5.1.2 Information on Suppliers and the Products that the Firm's Supply

Summary of interviews regarding information about MNE suppliers is presented in Appendix D3. Further details regarding suppliers and their products were presenting in following order. In terms of the supply organisations, the suppliers were categorised into four groups namely producer, agent, outsourcer, and distributor. Respondents B and D informed that their firm was outsourcing a number of apparel jobs such as washing, sewing, bleaching, embroidery labelling, and apparel making. Cotton was imported from the U.S, China and Thailand by respondents C and D, as Indonesia is not a cotton producing country. Fabrics were imported from China, India, and Bangladesh. Packaging materials supplied by local suppliers. Five respondents confirmed that the criteria for supplier selection should comply with the company's criteria. However, supplier C confirmed that the focal company have no requirements in the supplier selection process.

In terms of the supplier selection process, there were four processing stages: quotation, sending samples, negotiation and the contract being awarded. In addition, firms B, C and E required sample tests and initial audit on the supplier's premises. The first stage of the supplier selection process was sending a quotation to a number of suppliers or vice versa. Once the sample was received by the customer, the next stage was the customer pilots the test sample. Respondent E testified that the auditors also audit their suppliers' supplier. The last stage was negotiation with at least two suppliers. Price, quality, delivery, and minimum order were the dominant

criteria in agreeing and signing a contract with a supplier. Respondents B and D confirmed that the outsourcing selection procedure included an initial audit by an internal auditor at the proposed factory. Respondent B said that the firms to which orders could be outsourced were nominated by the focal company. In contrast, respondent D informed that the focal company hire suppliers and outsource firms. Therefore, the focal company leads the supplier selection procedure.

Monitoring of suppliers was carried out either by communication (telephone, email, etc.) or by visiting the supplier's factory. The monitoring process for outsourcing was achieved by placing their own auditor and a focal company auditor at the outsource factory premises. Firm D confirmed that the focal company monitored the supplier and outsource companies by employing a focal company or third party auditor to visit the outsource factory.

Factors such as on time delivery and segregation of delivered products and sample products were the areas most complained about to the suppliers. Therefore, the suppliers responded by delivering new products or reworking the goods. However, respondent D complained that because their suppliers were appointed by the focal company, inaccuracies in deliveries caused a bottleneck in the production process.

The networking between customer and supplier has been established over many years. However, the respondents informed that the firms updated and added new suppliers every year. In contrast, respondent D said that the firm did not have a direct relationship with the supplier. This was due to the fact that the suppliers were employed directly by the focal company.

5.1.3 Respondents' Perceptions with Regard to Sustainability Practice

Appendix D4 summarizing information in regard to sustainability practices. In general, the five respondents testified that sustainability practice has been adopted in textile and apparel MNEs. The information obtained from face-to-face interview includes sustainability, social, environmental and economic sustainability, ranking in triple bottom line sustainability, and challenge in sustainability practice.

Five respondents were accustomed with the word 'sustainability'. Furthermore, the respondents said that economic, social and environmental sustainability had been adopted from their customers' codes of conduct. In response to the question about how the firms maintain

sustainability in their business, innovation and efficiency were key words. Furthermore, respondent C stated that the firm has been adopting new technology in the yarn manufacturing process. The respondent said that new technology in the yarn production process affected cut off production costs and resulted in better quality. Respondent E stated that developing new products through the Research and Development Department was beneficial in maintaining sustainability in business. This interviewee said that the main goods manufactured in the apparel division of the company were uniforms and field equipment for the Ministry of Defence. Furthermore, the respondent said that inventing new uniforms and field equipment for specific purposes was needed. The respondent said that the firm invested significant funding in Research and Development. Respondent D said that the firm has an Industrial Engineering Department in order to accomplish efficiency by creating new working procedures. Meanwhile, respondent A said that the worker-management relationship was necessity to maintain sustainability in business. The interviewee testified that good communication with workers was effective in reducing labour turnover. The participants acknowledged that economic sustainability was almost the same as sustainable business.

In terms of social sustainability, five respondents confirmed that social compliance was the most important criteria to accomplish. However, respondent D testified that the firm has one customer that requires the highest standard in social compliance. The participant said that once the firm received an order from this customer, the firm works hard to comply with the codes of conduct from other prominent brands. In addition, the respondents stated the customer requires corporate responsibility accomplishment with reference to meeting the workers' basic rights. The five respondents concluded that as apparel and textile supplier exporters, it was intolerable for them to have unfair business practices. Any firms which do not observe and put into practice the codes of conduct would go bankrupt.

In terms of environmental sustainability, waste management systems were an essential requirement to be met by the firm. Company E and C hold an International Environment Management Certificate. There was a growing trend in high increases in local minimum wage, high cost bureaucracy, labour union movement, obstacles in recruiting and teaching good workers, provocation from non-government organisation were considered as a barrier in maintaining a sustainable business.

Customers of textile and apparel goods from developed nations require International standards in implementing social and environmental sustainability from their suppliers. The requirements

with which the suppliers must comply include social compliance and environment management systems. The aim of social and environmental compliance was to eliminate unfair business practice. As firms that produce their goods for the export market, textile and apparel producers had awareness with regard to the National and International standard certificates. Furthermore, the five respondents had been awarded both the local and international certificate as follows. In terms of the National Certificate, five interviewees confirmed that their company had been awarded the PROPER certificate from The Ministry of Environment. The PROPER award was a certification in waste management systems for the manufacturing process. The PROPER award was classified into three groups namely red, green, and blue. A firm that holds a red PROPER certificate means that the company was not able to provide a waste management system according to the Ministry of Environment requirements. Moreover, the firm that holds a Red PROPER could not gain access to bank credit. Blue PROPER refers to a fair waste management system and Green PROPER refers to the best waste management system. Five respondents confirmed that their company held a Blue PROPER certificate. In addition, the five respondents stated that their firm holds occupational health and safety certificates from The Ministry of Manpower.

In terms of International certification, five respondents stated that their company has an International award. Respondent A specified that the firm holds Initiative Clause Social. The ICS was an award in social compliance in manufacture. Two firms had been awarded International Standardisation for Organisation 9001 for management systems and 14001 for environment systems. Furthermore, respondent C stated that since the firm was awarded ISO 9001 and 14001, the focal company auditor did not require any additional social and environmental compliance document. The respondent said that the initial focal company auditing of the firm was quicker in comparison with the initial audit before the firm held the ISO certificate. Respondent E stated that the company had been awarded *Bundeswehr* certificate. This award was issued by The Ministry of Defence in Germany as standardisation of uniform and field equipment for The Ministry of Defence. The firm was also awarded an ECOTEX certificate as certification for screening of harmful substances in textile products. Company B, C and D were awarded The Worldwide Responsible Apparel Production Principles certificate. WRAP principles cover basic standards that address labour practices, factory conditions, environmental and customs compliance. The respondents testified that the WRAP certificate was widely accepted by most International Prominent brand customers.

Firm D holds a Global Security Verification certificate that enhances supply chain security standards and criteria such as Customs Trade Partnership against Terrorism (C-TPAT), Partners in Protection (PIP), and European Union Authorized Economic Operator (AEO). Furthermore, participant D stated that their customer required a GSV certificate. The other interviewees stated that their company held the CTPAT International certificate. Furthermore, the respondents explained that apparel suppliers must hold a CTPAT certificate to comply with the customer codes of conduct. However, the participants testified that the International certificate was acknowledged as a preliminary document audit. Furthermore, the respondents said that the customers do not require the International certificate as an obligatory document. The exception was respondent E who said that the *Bundeswehr* Registered Certificate was a compulsory preliminary document for customers of The Ministry of Defence. Respondent D informed that their customer, a leading brands customer, acknowledged that the Indonesian workers have good skills in apparel making. The respondents said that producing apparels for prominent brands was more profitable rather than producing apparels for supermarkets and value brands. However, high cost bureaucracy and politics from non-government organisations and authorities was considered as a challenge in developing the textile and apparel industry. Respondents B and D confirmed that their company had to allocate a special budget and allocation of unproductive working time in order to deal with bureaucracy. Respondent A said that non-governmental organisations tend to provoke labour unions. Furthermore, respondent A said that social issues such as worker rallies created a negative image for the company.

5.1.4 Key Learning from Onsite Visit and Interview Results with Compliance Managers from Five MNEs

Five structures of supply networks were identified from five different MNEs. This research adopted a conceptual framework as proposed by Kim et al (2011) in mapping the structure of supply networks, namely materials flow and the contractual relationship. Therefore, MNE supply networks were constructed based on the production process. In general, the firms represented were upstream, midstream and downstream textile and apparel companies in Indonesia. Textile and apparel MNEs depend greatly on imported raw materials, especially textiles and chemical dyeing. The firm hire sub-contract workers and sub-contract part workers. In general, international prominent principals highly influence through the production process.

The second purpose of this study was to explore key characteristics of sustainable business practice. These MNEs were suppliers for international prominent principals. These international customers have been establishing codes of conduct which suppliers must comply with. The codes of conduct were a necessity to be applied through the suppliers as the customers recognise that they might not be able to monitor every tier of suppliers worldwide. In addition, their suppliers have specific local regulations and laws. The respondents testified that fulfilling the codes of conduct was required by their international suppliers and this was the most important stage in the initial supplier selection process. The selection process was a continuous monitoring process. The respondents informed that once they have signed the contract, the firms were to be monitored by the customers throughout the production process by employing a third party auditor to be in-house at the production site.

International apparel and apparel principals were not required for the sustainability standard certificates such as ISO 14001 for environmental standards, and ISO 19001 for social sustainability standards. The international customer organisations have their own standards in assessing their suppliers. However, the MNE managers testified that being awarded an international social and environmental standard certificate was highly acknowledged by international principals. These MNEs were experienced in producing textile and apparel for export, the management has been going through adopting sustainability into business practices. Barriers and challenges in implementing sustainability in business practices were identified. Table 5.1 represents drivers and challenges in adopting sustainability practices with respect to sustainability standards in the textile and apparel industry.

Table 5.1 Drivers and challenges in adopting Triple bottom line sustainability practices in accordance with sustainability codes of conduct in Indonesia MNEs (Source: own illustration)

Sustainability criterion	Social Sustainability	Environmental Sustainability	Economic Sustainability
Human Resource Management	**Drivers:** - Comply with local regulation and law regarding worker's rights were internationally acknowledgeable - Job rolling on production floor eliminates worker's protest.	**Drivers:** - International customers give high priority in monitoring worker's involvement within environmental management system. - Succeeding in implementing environmental waste management system need support and action taken from the workers	**Drivers:** - Good practice in HRM prevent from worker's strike and resignation. - Good relationship between workers-management was beneficing on onsite interview that held by prospective customers. - Regularly training to workers were eliminate return-product from customer.
	Challenges: - Build synergy between contract and permanent worker. - Build mutual understanding between management, labour union, and workers. - Contract workers that accepted internationally but it creates negative issues among local worker. - How to communicate to senior workers in rolling job.	**Challenges:** - How to communicate standard operational procedure in waste management system to the workers as they less action in practicing it. - High-cost in worker's training in waste management system.	**Challenges:** - How to retain skills workers, as they were the important asset for the firm. - How to negotiate with government and workers to in compromising of high upward trend in local minimum wage. - How to convince international customers due to labour union strike. - -High increasing national wages made the MNEs harder to compete with other exporter from neighbourhood countries such as Vietnam and Cambodia

Table 5.1: (Continued)

Sustainability criterion	Social Sustainability	Environmental Sustainability	Economic Sustainability
Health and safety	**Drivers:** - Health and safety management was the most priority in initial on site auditing of supplier selection process. - Support from the authority by facilitating training and supplementary regulation in health and safety system	**Drivers:** - Health and safety management system took account as significant point of environmental management system.	**Drivers:** - Reduce shortage capacities due to absent and working accident. - Eliminate negative news in health safety issues.
	Challenges: - How to increase worker's awareness in their health and safety during working time. - Local NGO tend to blow up health and safety issues.	**Challenges:** - How to urge workers in wearing health and safety protection during working hours.	**Challenges:** - How to respond negative news in health and safety issues. - Health and safety equipment was costly and the workers tend to not using it.
Environmental practices	**Drivers:** - Environmental management system needs active participating from the workers. Workers participation in practicing waste management system contributes high point in awarding international environmental certificate.	**Drivers:** - Environmental practices were guided through environmental management system. - Environmental practices were the core of environmental management system. - Support from local authority in implementing sustainability standard.	**Drivers:** Hold international environmental standard certificate generate good point in initial audit supplier selection process. Awarded national environmental standard as compulsory to get funding from financial institution.
	Challenges: - How to retain environmental practices during working hours. - Workers tend to lessen in environmental practices at night-shift.	**Challenges:** - How to disseminating to society that apparel production process was likely zero waste. - How to maintain consistency in environmental practices.	**Challenges:** - International Environmental standard certificate was high cost and hard to implement it.

Table 5.1: (Continued)

Sustainability criterion	Social Sustainability	Environmental Sustainability	Economic Sustainability
Legal compliance	**Drivers:** - Legal workers reduce worker's movement and strike. - The workshop reside at the manufacturing areas that provide by the government	**Drivers:** - National environment standard certificate as compulsory to get mortgage from local financial institution. The workshop resides at manufacturing areas to eliminate environment impact to residents.	**Drivers:** - Legal firm was compulsory document to export. - Legal textile and apparel exporter firms receive benefit from government in term of tax holiday and other benefits. - Comply with local law and regulation as basic standard in supplier selection process.
	Challenges: - Under Table practice from local authority were unbearable. Local regulation tends to change and takes time to disseminate it to the workers.	**Challenges:**	**Challenges:** - How to reduce hidden cost as impact of negative bureaucracy within local authority
Custom compliance and security standard	**Drivers:** - Training to workers in regard to Custom compliance awareness as the workers were assessed during initial field site assessment. Benefits from government in facilitate training in custom compliance awareness.	**Drivers:**	**Drivers:** - Awarding Global Security Certificate was compulsory action taken by supplier to export their goods. - International customers require high standard to comply with custom and security procedure.
	Challenges: Conflict between workers and security teams due to tight security inspection on working site.	**Challenges:**	**Challenges:** - How to cope with inefficiency in national custom regulation.

5.2 Key Finding from Interviews with MNE Workers

Semi-structured interviews were conducted with six MNEs workers. They had been working with the textile and apparel firm for at least five years. In general, the questionnaires were divided in two sub-groups namely worker obligations and rights, and their opinion with regard to sustainability. Summary of interviews with the workers is presented in Appendix D5.

5.2.1 Information with Regard to Workers' Rights and their Perception of Sustainable Management Practice

The six participants were of operator level. Their tasks vary from workshop to the storage room. Furthermore, participants testified that they had opportunities to be promoted to a higher level such as superintendent and supervisor. However, two respondents testified that the recruitment process was biased, as their managers did not disclose any information about the recruitment process. All respondents received a wage and benefits in accordance with the legal minimum wage every month. One month extra wage was given once per year. The benefits included health insurance and pension at the local level. Furthermore, participants confirmed that they received 12 days holiday per year. The participants pointed out that they received benefits, because they were permanent workers. Facilities provided for them included a complimentary meal, shuttle bus, on-site clinic, uniform, and health and safety equipment. The participants testified that their workshops have good air circulation and lighting. Research and development, hire expatriate skilled-workers, launching new product, and outsourcings were identified as the respondent's perception of sustainability management.

The respondents concluded that 24 hours production process per day and exporting were given as economic sustainability. The respondents testified that conflict between workers and the Labour Union within the organisation was highlighted as a potential problem in the worker/management relationship. They testified that every large company has a Labour Union. The majority of members of the Labour Union Committee were working at operator level. The Labour Union received funding from the firm and the workers. The Labour Union aims to represent the worker's voice and representing the workers in case there was any conflict between workers and management. However, the respondents testified that the Labour Union were less responsive in representing the workers. The respondents pointed out that their

employer had established a waste management system. Furthermore, they testified that they received regular training in waste management.

Social sustainability was the first priority in terms of sustainability ranking. The respondents pointed out that workers need to meet their basic needs to make life secure. Economic sustainability was accounted as the second priority as they argued that the firm must earn profit to remain sustainable in business. Environmental sustainability was the last rank that was chosen by five out of six participants. The participant who chose environmental management as their second priority testified that they lived near the factory and the neighbourhood have been struggling to cope with air and water pollution without any concrete solution to overcome the problem.

5.2.2 Key Learning from MNE Workers

Interviews with workers were important as workers were the most dominant resource in the apparel industry. Apparel products were highlighted as a majority export in comparison with textiles in Indonesia. The respondents from the compliance manager group testified that their international customers paid great attention concerning worker's rights. In addition, the customers interviewed a number of workers at random as a compulsory procedure as part of the initial site audit process. Potential issues in sustainability management practices according to worker's opinion were given in Table 5.2.

Table 5.2 Sustainability issues were linked with sustainability standards. (Source: own illustration)

Sustainability criterion	**Social sustainability**	**Economic sustainability**	**Environmental sustainability**
Human resources Management	-Conflict with labour union. -Conflict with contract workers due to differentiate in benefit -Conflict among workers due to unfair selection process on promotion	-The firm recruit contract worker to overcome shortage human resource.	- Contract workers
Health and safety	-Comprehensive health and safety equipment only provided in case of initial on site audit. -The workers did not report health and safety incident to the customer's auditor.	-Conflict with the management as the workers receive basic health insurance and the insurance did not cover health cost.	-Air pollution from textile within onsite workshop was unnoticeable, and the safety equipment could not cover such problem.
Environmental practices	-conflict with community near the firm due to pollution. -Give priority to recruit new worker who reside near the firm to resolve the conflict		- Protest from community near the firm due to air and waste pollution
Custom compliance and security standard	- Security teams tend to exaggerated in assessing workers during office hours.	-	-

5.3 Findings from Interviews with SME Workers

The interviewees work, geographically, in two Batik clusters in Surakarta and Pekalongan. The majority of the respondents have been working in the field for at least five years. The participants have experience of working in different firms. In general, for the questionnaire protocol, respondents were divided in two sub-groups namely workers obligations and rights, and their opinion with regard to sustainability. Summary of interviews with the workers is presented in Appendix D6. The findings from these questionnaires were presented as follows.

In term of worker's occupations, the workers at management level also have experience at staff operator level in the same firm, and they have then been promoted to the middle management level. One worker said that supervisor level was the highest level they could attain in a small to medium-sized firm. Management level was one level lower than the owner. The owner chose the workers to be promoted based on his own opinion. However, other workers considered that the promotion process was unfair. Workers' right referred to wage and benefits such as bonus, health aid, food, scholarships for their children, and pension insurance. In response to the question regarding payment of wages/salary, four participants received monthly salary and the others were paid weekly. Four respondents received wage based on their volume of work. The other three respondents confirmed that their wages and benefits were better than the legal local minimum wage. One respondent had no idea about the legal local minimum wage and nine respondents received benefits and wages less than the local minimum wage and benefits. Three respondents testified that they would receive pension insurance if they worked there at least ten years. Work space and air circulation, safety equipment, dormitory, allowance, communication device, motor cycles were all classified as working facilities. One worker received dormitory accommodation, 3 meals, toiletries, electricity, and a motor cycle as work benefits. However, the participant admitted that she did unpaid overtime at least four hours a week. The other respondent confirmed that the respondent finished producing apparel faster than the respondent's used to once the firm refurbished the sewing machine and improved air circulation.

5.3.1 Key Findings with Regard to Workers' Perspective of Sustainability Practices

Networking, marketing, promotion, closeness to official authority, reputable family business, on-line business were all considered as sustainability of the business. The respondents mostly

work in reputable family business over generations. They admitted that the long term networking gained sustainable customers and a sustainable business. According to respondent opinion, economic sustainability includes making a profit due to quality, delivery, customer groups including wealth-classes in society, firm size, firm groups, and price. All of the participants work in middle sized firms. Eight interviewees confirmed the product which their firm produced was exclusively Batik textile. The majority of participants agreed that quality was a driver to gain profit.

Workers' views about social sustainability referred to the worker-owner relationship, the relationship among the workers, working facilities, salary and benefits, work targets and supervision. One worker testified that he had been working for twenty years at the firm. A participant is considered as an expert in dyeing operations, so this participant received a fair wage and bonus. Furthermore, the participant said the he negotiated his wage and bonus personally with the owner and the owner agreed with his proposal. The participant continued that the participant's working fellows do not have opportunity to negotiate personally as the participant did. Two respondents considered that the owner was very concerned with the workers' needs and prosperity.

Batik textile and apparel waste were classified into three groups including solid, liquid, and air pollution. Four respondents did not have any opinion about environmental sustainability. Furthermore, one respondent said that the respondent does not concern whether the firm has waste management or not. Another respondent said that the owner allows the workers to take quilted fabrics free. In return, the workers have an additional weekly bonus as they sell the quilted fabric to third parties. One respondent testified that the liquid waste was piped to the river without any waste management system. The respondent said that the owner used to receive complaints from residents who live close to the firm due to this action. Nowadays there were no complaints from the residents as the owner compensates them with communal facilities. One worker said that piping liquid waste to the river without waste management was common in the Batik industry. Respondent F testified that the firm used to receive complaints from residents due to the firm not having liquid waste management. Furthermore, the firm was initiating the development of a communal waste management scheme for the cluster. As a result, there were no complaints from local residents. Another worker confirmed that the firm had individual waste management. The solid waste was neutralised from additives and then the waste was piped to the communal waste management system.

Ten workers voted social sustainability as the first priority that management should take into account. Eight respondents highlighted that a fair wage would have a positive impact on working productivity. Two workers had a different opinion as they said that good working relationships between workers and owners and a good working environment would increase productivity rather than compensation in money. Furthermore, the two respondents received wages and bonus higher than the legal local minimum wage. In contrast, the other two workers considered economic sustainability as the first priority that company should comply with. They argued the firm must gain high profits first in order to compensate with fair wages and benefits to the workers. The majority of the respondents chose environmental sustainability as the last priority that the firm must comply with.

5.3.2 Key Learning from Interviews with SME Workers

Key learning derived from interview result with SME workers is presented in table 5.3.

Table 5.3 Lesson learned from interview with SME workers (Source: own illustration)

Sustainability criterion	**Social sustainability**	**Economic sustainability**	**Environmental sustainability**
Human resources Management	- No negotiation in wages and benefit. - Unequal opportunity to promote to higher management level. - Unfair competition between the workers due to unfair promotion. - The worker did not have worker union to accommodate their needs. - The management did not give a letter of recommendation in case the workers resigned.	- Majority of workers received wages lower than local legal wages. - The workers did not receive wages when they were absent or on leave. - No pension and annual leave for the workers.	- No induction in waste management system for new workers. - The authority never inspect with regard to worker's rights and obligations.

Health and safety	- The workers did not receive proper training in health and safety system. - The worker less active in protecting themselves in health and safety matters. - The availability of health and safety equipment was limited. - Workers' perception that there were no risk in health and safety during working hours.	- Majority of workers received partial reimbursement in case of an accident at work. - Accidents at work were not considered a problem among workers. - No further action from management in case the workers get terminally injured as result of accidents at work.	- The workers do not acknowledge that health and safety has any link to waste management systems.
Environmental management practices	- The workers did not receive proper training in waste management system. - Most workers have no idea regarding the waste management system.	- Issues in unethical waste management reducing demand for high quality goods. - Questioning from visitors in environmental management practices during working hours bothers the workers.	- Complaints from neighbourhoods with regard to air and water pollution due to inappropriate chemical waste management system. - The workers were not involved in on site environmental audit by local authority. - Proper action in environmental management practices only happens when the firm was to be inspected by the NGO.

5.4 Key Findings of Interviews with the Indonesian Government Agencies

A face-to-face interview with the national and local government agency were useful in gaining information regarding policy and programmes to strengthen the competitive advantages of the textile and apparel industry. Six officials from the government agency were interviewed to gain information about the government's role in empowering textile and apparel companies. Table 5.4 presents the respondents' bio data.

Table 5.4 Respondents' occupation form government officials (Source: respective respondents)

Name of Government Institution	Respondents' Occupation
Department of Co-operative and MSMEs, Surakarta City	Department Head
Department of Industry, Trade, Cooperatives and MSMEs, Pekalongan City	Head of the division of MSME
The National Development Planning Agency	Deputy Director for Cooperative and the Empowerment MSMEs
Ministry of Industry	Director of Multifarious and Textile Industry
Ministry of co-operative and MSME	Deputy Assistant
Indonesian National Standard Bureau	Head of Systems Implementation and Application of Standards

It can be seen from Table 5.4 that two respondents were local agency officials from Surakarta City and Pekalongan City, East Java Province. The cities represent two SME industrial clusters where the field work was carried out. The official authorities represent the government agency representatives and policy makers on the development of the textile and apparel industry in Indonesia.

5.4.1 Key Findings from Interviews with the Local Government Agencies

Table 5.5 presents the interview results with officials from the local authorities. In general, the interviewees' questions included policy, strategy, and programme, opportunities, and challenges in developing Batik SMEs.

Table 5.5 Summary of interview with local official agencies (Source: respective respondents)

	Official Agency, Surakarta City	**Official Agency, Pekalongan City**
Number of Batik SMEs	1,340	2,236
Purpose of empowering SMEs	• Carry out central government policy • Increase local revenue • Value added multiplier effect	
Strategy and programme in empowering the SMEs	• Involving stakeholders • Collaborations from upstream to downstream batik industrial chain • Marketing collaboration	• Industrial development • Business coaching • City branding • Collaborating a triangle partnership business
Strengthening the business	A. Macro : • Regional economic development • Industrial chain B. Micro : • Institutional development • Empowerment of human resource	• Partnerships • Counselling • Education
Inter-sectorial collaboration	Ten departments within municipality	Five departments within municipality
Opportunities	• Potential demands in batik product than other textile and apparel	• Supply 70 per cent of national market • Distinctive characteristic
Challenges	• Less innovation and motivation • Difficult to engage • Offensive import textile printing with batik motive and low price in domestic market	• competitors from other cities • Issue in environmental management • Resentment among SMEs owners

It can be seen from Table 5.5 that findings with regard to such questions were as follows. Interviewees explained that the number of SMEs shown in Table 5.5 was partial data. In fact, the numbers of SMEs are larger than the amount shown in the Table. This happened because every year a number of SMEs either added or collapsed. In addition, the number of SME workers was remaining unknown due to the fact that too many SMEs have home workers. According to respondents, the purpose of empowering SMEs was to fulfil central authority policy. They said that since regional autonomy had been realised in 2004, provinces and cities had the authority to manage local finances independently and enhance local revenue based on potential advantages in the region.

Pekalongan have been establishing a partnership with the two largest city in Indonesia, namely, Surabaya City and Jakarta City, to promote Batik Pekalongan. Surakarta has been collaborating with Batik SME stakeholders locally and overseas. Furthermore, Surakarta was initiating collaboration with streams of industrial chains including the producers of rosin, grey textile, chemical and natural dyes to bring costs down. Pekalongan and Surakarta have been considered as the biggest Batik producers in Indonesia and furthermore, these cities chose Batik as an excellent commodity and established Batik clusters and Batik centres. The Village Excellence Product was a government programme with a focus on improving market opportunities through the development of industrial clusters or business centres of small to medium-scale enterprises.

The official Surakarta Agency explained that Surakarta has two Batik clusters namely Laweyan and Kauman SME Batik industrial clusters. The two Batik clusters were pilot clusters. These clusters were examples of successful cluster establishment. Nowadays Pekalongan has seventeen Batik industrial clusters.

In terms of opportunity in Batik and apparel industry, these respondents were optimistic that demands in Batik products will increase significantly. However, the respondents testified that they encountered a number of difficulties, including massive imports of Batik printing from other Asian countries. The official authority of Pekalongan explained that according to the definition of Batik, it was a wax-resistant dyeing technique using wax. Based on such definition, Batik products consist of two classifications namely, Batik hand stamping and Batik hand painting. Moreover, as the Batik production process was a manual process, the goods were lower in volume and higher in price compared with fabrics manufactured by the use of textile machinery alone. The imported fabrics have a Batik motif as the overseas producers observed the high domestic demand for Batik fabric. Moreover, the respondents testified that

a number of SME owners have been establishing their firms for generations. The SME owners have steady networking and were willing to influence the business cluster.

5.4.2 Key Findings from Interview Results with the National Government Agencies

In general, the subjects of the questions included the agency's role and authority, policy, strategy, programme and audit programme, opportunity and challenge in such filed. Appendix D7 represent roles of each organizations. Three respondents represented top-management level within the ministries and participants from The Ministry of Co-operative and SMSEs from middle level management. Further explanation was given as follows: The roles and authorities include formulating, executing, assistantship and monitoring policy and programmes. Furthermore, The Ministry of Industry and The Ministry of Co-operative and SMEs have subsidiary offices in every province and municipality or county. An official from The National Development Planning Agency explained the agency role was forming partnerships at least nineteen ministry levels relating to the empowerment of SMEs. An official from the Indonesian National Standard Bureau explained the agency role includes formulating an accreditation system. The Bureau does not conduct certification assessment or issue the certificates.

The Official Director from The Ministry of Trade explained the fact that the regional minimum wage had increased by about 40% than in the previous year which threated the existence of the apparel industries. The respondent said, *"Many export apparel producers appealed to delay adopting a minimum wage. The producers argued as if the workers basic salary had increased by 40%, the workers should improve their output up to 40%. If the workers do not do so, the solution would be to raise the price of the goods by 40%. If such a scenario were to be put in place, the overseas customers would transfer their business to other countries that offer the same quality of fashion wear as Indonesia's but at a lower price".* Furthermore, the interviewee said local textile producers could not compete with overseas textile producers as the local producers have been using textile machinery which has not been up-dated for more than twenty years. The official from The Ministry of SMEs explained that the majority of SMEs were privately managed and the information about their companies remained confidential. Another major issue was that the SMEs accredited that the empowerment programmes make no significant contribution towards the existence of their business. Furthermore, the official from The National Development Planning Agency said, *"Issues in SMEs were of the same nature*

as issues of SMEs in other developing countries. However, we aware that SMEs owners pointed out that the authority were less responsive to respond the turbulence of business environment.'

In term of policies, strategies and planning programmes, the official agencies agreed that improve conducive business climates include improve regulation that support to textile and apparel industries, improve infrastructures and encourage active participatory from textile and apparel stakeholders. Furthermore, the representative from the National Standard Bureau explained that the organisation has been formulating an eco-labelling standardisation system to support the textile and apparel industry in response to international customers' awareness in environment management. Three respondents explained that the ministries agreed to establish textile and apparel cluster industries. The Ministry of Co-operative and MSMEs have been introducing The Village Excellent Product programme. The programme was based on Presidential Instruction No. 6/2007 concerning the policy of accelerating the development of the real sector, and empowerment of micro, and small to medium scale enterprises (Ministry of Co-operative and MSMEs, 2011). Furthermore, the Village Excellent Product has been adapted from the One Village One Product programme that was established by the Japanese Government in 1980 with the aim to empower small and medium scale industries. The participant from The Ministry of Industry confirmed that the organisation launched a grant incentive for the upstream and midstream textile industry to enable them to replace obsolete machinery.

Monitoring and audit programmes were classified into three groups, namely short term referring to annual programmes, mid-term referring to 5 year programmes and long term referring to 6 to 20 year planning programmes. Furthermore, there had been quarterly monitoring of short-term programmes. Annual reviews had been carried out on mid-term programmes; long term audit had been done at least every 3 years based on ongoing programmes. However, the official from The National Development Planning Agency testified that according to participant experience, long-term audit had not happened. The participant confirmed that national elections were held every 5 years. Once a new government was chosen the new authority establishes new policies and planning programmes. As a result, the long-term programme was most likely to become an artificial planning programme. Monitoring and review programmes with the purpose of reducing unnecessary effort and assisting in deciding whether the programme was a success or in need of amendment to an alternative programme was necessary.

The official government agencies concluded that the national textile and apparel industry have competitive advantages in embracing a global market. The official from The Ministry of Industry concluded that the upstream and downstream textile and apparel industry was considered as the major producer to the global market. Furthermore, the participant from The National Development Planning Agency found that the SME sector was very dynamic and robust. The participant explained that the SMEs have been establishing for generations and the enterprises have been transferred to the next generation. The official from The National Standardisation Bureau informed that small to medium firms did not have the significant advantages in adopting national standard. In addition, the participation of SMEs in obtaining such a certificate was low due to their participation being voluntary action rather than obligatory. Furthermore, national standards that refer to the standardisation system of the Batik production process was unsettled as there were enormous production processes involved in producing a piece of Batik. Moreover, the interviewee confirmed that the Batik SMEs encountered obstacles in implementing environmental management practice. The participant testified that according to the majority of SMEs, they could produce Batik textiles with an environmentally friendly production process with the consequence that the goods will not be economically profitable. The SMEs confirmed that the demand for green Batik products mostly derived from overseas customers. As the SMEs have limited networking with such customers, they produce Batik textiles and apparels to supply the majority local market that requires low-priced goods and less awareness of green products.

5.4.3 Key Learning from Interviews with Government Agencies

Key learning and findings from interviews with local government agencies was presented in Table 5.6

Table 5.6 Key learning from interview result with the Local Authorities (source: own illustration)

	Perception of Interviewee from Local Government Agency
Drivers and challenges in social sustainability	(+) The SMEs contributed to reducing unemployment among the cities as Batik textile and apparel jobs were considered as a human-resource centre. (-) Unfair wage to the workers as SMEs did not compulsorily comply with local authority. (-) Health and safety equipment provided for the workers was not adequate. (-) The SMEs pointed out that the local agency less active to promote the SMEs within their territory.
Drivers and challenges in economic sustainability	(+) The SMEs contributes 70 per cent of domestic market. (+) Demands in bedding, dining cloth, cushion and any other batik products rather than batik textile and apparel have been increasing. (+) Distinctive characteristic of batik painting and stamping. (-) The SMEs have less motivation to expand their market. (-) Unfair competition among SMEs caused price-war. (-) Massive import in textile and apparel.
Drivers and challenges in environmental responsibility	(+) Grand from National and International Organisation to establish communal waste management system within SMEs business clusters. (-) Issues in improper waste management system. (-) The SMEs contributed majority caused of river pollution.

Table 5.7 presents key learning from the national government agency issues in social, economic, and environmental sustainability.

Table 5.7 Key learning interview result with the National Government Agencies (Source: own illustration)

	Perception of Interviewee from National Government Agency
Social sustainability	- Large firms pointed out the government give less support in policy and regulation toward sustainable business environment. - Co-ordination and co-operation among National Government Agencies were ineffective. - Majority of large apparel firms criticised high increase in minimum wage and that it had caused a number of large firms move their business overseas.
Economic sustainability	- Illegal textile and apparel exports - Regional minimum wage increased by 40% caused problems in the apparel business. - High-cost energy and frequently supply shortages. - Deprived port infrastructure. - Old textile machinery.
Environmental sustainability	- National standard certificate was recognised less both nationally and internationally. - How to establish national regulation in order to eliminate barriers and regulatory constraint to embrace the global market. - Reduction in incentive scheme due to limited funding. - Tricks from export brokerage.

5.5 Key Findings from Interviews with Non-Governmental Organisations

Face to face interviews had been conducted with five committees from non-government organisations. Furthermore, two participants representing the committee of Batik SMEs Industrial cluster organisations from Surakarta City, two respondents from the Batik Industrial Cluster SMEs from Pekalongan City, and one respondent from the Association Council of

Wage and Employment in the East Java Province. Table 5.8 gives the general information of the participants.

Table 5.8 Respondents' occupation forms the representatives of NGOs (Source: respective respondents)

Respondents' Occupation	Name of Organisation
Vice-Chairman	Batik Development Forum, Surakarta City
Public Relation Section	Batik Village Association, Surakarta City
Chairman	Batik village association, Pekalongan City
Chairman	batik village association, Pekalongan City
Adviser- Board	Regional Council of Remuneration and employment , East Java Province

5.5.1 Key Findings from the Interview Results in Regard to the Organisation Roles

Summary of information regarding roles of NGOs is presented in Appendix D8. The respondents testified that the establishment of the organisation was brought about by the needs of professional organisation to link with the interests of the Batik community and the stakeholders. Furthermore, four committees of the Batik forum informed that there were many grants from authorities and private organisations, namely empowerment programmes for the Batik community but such programmes had not been successful due to lack of information. Meanwhile, the small number of Batik producers that received a grant were not liable to share such information with the other Batik producers. As a result, there was a gap between the group of Batik producers that gained benefit from private and agency organisations and the other group that did not have access to apply to the programme. This situation went on for some time and the competition between the two Batik groups resulted in a negative business environment. A number of people who were concerned about the negative business environment within the Batik cluster then initiated the establishment of an organisation to act as the formal facilitator to link the Batik communities to the stakeholders. In addition, Organisations A and B were considered as the first Batik SME forum in Indonesia. The respondent said that there were number of textile and apparel organisations but the membership referred only to large companies.

Organisation E was established to respond to the government regulation regarding the formulation of local minimum wage annually. Therefore, the membership of this organisation was mandatory as it affected the implementation of local minimum wage. The Batik forum members include micro, small to medium firms, workers, official district, Batik shop, home-stay, restaurant, home-worker, and any other community who were willing to join. The respondents said the government have been establishing new Batik clusters so every batik cluster has a formal organisation. The committees of the Batik forum concluded that the Batik production process was considered as labour intensive. Therefore, manual production process costs were higher than fabric printing. However, the Batik community has not widely accepted the developments of resist-dyeing wax technology. On one hand, there was a perception among Batik artisans that the new technology was a risk to their jobs. On the other hand, Batik producers were aware of social problems arising once the Batik firm was using modern resist-dyeing wax technology, as the workers were living in the same neighbourhood. In contrast, re-generation of Batik artisans was extinct; as the younger generations' perception was that the work of a Batik artisan was not a satisfying or rewarding job. Furthermore, respondent D confirmed that the Batik forum established three years ago was due to a number of medium-sized Batik company owners being concerned about the workable business of small and micro Batik firms within the area. Respondent E confirmed that since the government formed in 1998, one of the advantages was the lack of restrictions for either individuals or organisations to criticise and take action in response to unfair practices in the industry. However, once the workers had any disagreement with the management, labour organisations had a tendency to protest. Thus, new problems have arisen as local and foreign investors pointed out that labour organisation action was considered as a barrier to steady business environmental practice. Moreover, respondent E stated that large companies were permitted to hire outsourced workers in order to address worker shortage.

In terms of planning programmes, respondent B confirmed that in general, the organisation's programme referred to economic value added for the members. Moreover, four interviewees stated that there were frequent grants available from public and private organisations. The programme referred to SME empowerment including training for either workers or management. Training in the natural dyeing production processes was the most common training offered. Respondent D explained that the members within the Batik forum have been receiving grants from the European Union. This programme was called the Clean Batik Initiative. The Cleaner Batik Initiative has been in operation from 2010 to 2014. Furthermore,

the interviewee explained that the CBI training provider was delivering training in the natural dyeing production process, using new technology in a non-dyeing-wax process, and training in health and safety for Batik workers. The committees from the Batik forum explained that their organisations have websites as media communication between members and the stakeholders. Respondent E explained that the organisation has an obligatory programme which includes renewal of the regional minimum wage annually and a mediator to resolve disagreements between the workers belonging to labour organisations and their employers.

In terms of the organisation's role between stakeholders and members interests, five interviewees testified what their organisation was doing as an official body to resolve either dissimilarity among organisations' member or the stakeholders. Respondents A, B, and C explained that the Batik forums were acknowledged as independent and influenced organisation. Therefore, there were numerous proposal programmes from private organisations offered directly to the Batik forum rather than being proposed through the local agency. In addition, respondent A explained that there were circumstances in which the local official government gather information from the Batik forum regarding their on-going programme that was facilitated by private organisations and then the local agency acclaimed that such a programme was part of local authority programmes to empower the Batik SME clusters. Meanwhile, respondent E explained that since the organisation had been instituted, the friction between workers and owners had been resolved peaceably.

Factors include a biased perception that the forum was only useful for well-established SMEs and the committees rather than for the ordinary members, incomplete programme action, less active support to involve the programme for majority members, were considered as barriers to evolving the organisation. Respondent B confirmed that as the membership was voluntary, the organisation had limited funding to implement the programme. Therefore the continuity of executing the programme depended on grants from profit and non-profit organisations. Respondent B testified that the challenge in manage the organisation was the members of organisation less active to attended on regular meeting. Respondent E testified that there were situations where the independent of labour organisations was arguable.

Factors such as innovation, maintaining the quality of Batik products, partnerships among SMEs were considered as drivers for organisations to maintain sustainable business. The committee of the organisations have been aware of the consequences of the implementation of the free trade agreement between Indonesia and a number of textile and exporter countries. The

respondents informed that a number of the forum member stated that demands from ASEAN countries have been increasing. Furthermore, the Batik committee said as the increasing demands in Batik goods refers to Batik fabric with natural dye, a number of Batik producers within their organisation shifted their production process and focused on the production process of Batik goods using natural dyes instead of chemical dyes. Furthermore, the respondents explained that a small number of medium-sized Batik firms have been initiating direct exports to ASEAN countries such as the Philippines, Malaysia, Thailand and Singapore.

However, the interviewees informed that the majority of forum members were not aware of the consequences of the implementation of the free trade agreement. Respondents B, C, and D explained that since the Free Trade Agreement between Indonesia and the largest textile and apparel exporter countries had been brought into effect on the 1 January 2010, domestic Batik demands have been decreasing significantly due to the availability of textiles with the Batik motif in the domestic market from overseas. Appendix D9 represent interview results regarding sustainability perspectives of the NGO participants.

5.5.2 Key Learning from Interview Results with Non-Governmental Organisations

Key learning as a result from face to face interviews with participants representing Non-Governmental Organizations is summarized in Table 5.9.

Table 5.9 Lessons learned from interview result with Non-Governmental organisations (Source: own illustration)

	Interviewee's Perception
Drivers and challenges in social sustainability	(+) Workers allowed to organise their job either in the workshop or at home (+) Partnership not only between worker-owner, but also links among Batik owners (+) Workers be able to resign and find a new job straight away (+) Positive trend in improving employees' welfare (+): Large companies accommodate at least basic workers' rights (-) Unfair payment to contract workers (-) Experienced Batik artisans tend to transfer from one to another Batik company (-) Inaccurate information about wages among workers

	(-) Wage based on work output more valuable than on a daily basis (-) Amicable solutions tend to unfair
Drivers and challenges in economic sustainability	(+) The Batik firms within the cluster have their own characteristic product (+) Appreciation of workers has an impact on financial benefits (+) Consciousness to enter niche market (+) Outsource to other Batik firms (+): Export oriented product (-) Price war among Batik business people (-) Price war between Batik producers and Batik business people (-) There was no separation between financial or personal and corporate interest (-) Batik owners refer to paradigm ‘less input for unlimited output' (-): Strike by employees affected company loss
Drivers and challenges in environmental responsibility	(+) Batik owners awareness in terms of ‘Batik green product’ (+) Established communal waste management among organisation members (+) Constructed Communal waste management (+) Large companies voluntarily instituting a waste management system (+) Large firms conscious that fulfilling waste management system was profitable (+) Grant from NGO and national authority to build individual waste management system (-) Inexpensive compensation paid by large companies in case they find unfair waste management practice (-) Using outlawed chemical dyeing due to the chemical dye being retailed without restrictions (-) Barrier to adopt simple waste management system as a number of Batik owners within the cluster were not members of organisation (-) Allegation that river contamination was caused by waste from the Batik production process (-) Liquid waste management system aid from local agency was infiltrating wells instead of refining waste (-) Existing collective waste management system has limited capacity

5.6 Key Findings from Interviews with SME Owners and Home-Worker Respondent Groups

Field site observation on small to medium-sized firms of batik textile and apparel and face to face interview were gathered from eighteen owners of small to medium-sized firms and a home worker.

5.6.1 Information Regarding the Customers and their Requirements

Information regarding SMEs and home worker customers is presented in Appendix D10. The end-goods vary from Batik textiles, apparel, and other Batik products such as bedding and Table linens. Customer information was presented as follows. Fifteen respondents stated that the majority demand was from local customers. 80% of the goods were delivered to Java, Sumatera, Kalimantan, Sulawesi, Bali, and Papua. At least 20% of Batik textiles were exported. The respondents export their products via an export agent. One respondent testified that all the goods were for export purposes. One respondent was a Batik textile supplier for a MNE exporter. A home worker supplied Batik apparel to a large national firm. Customers varied from end-users, national corporations, export agents and international principals. Fourteen respondents have textile and apparel workshop.

Contract awarded for at least three to six months. The award process was started when the firm sent samples and a prospectus to the customers, or the customer send their requirements to the firm. If the customers were interested in the offer, they required the Batik producers to send samples and any other requirements, to the customers. If everything was satisfactory, then a contract was signed. In addition, customers from public organisations advertised bid announcements in national newspapers. A homeworker testified that the corporate customer provides the fabric and the drawn design to the home worker.

Local export agents and international exporters required given stages of the production process and raw materials were in accordance to the customers' requirement. Legal business licence was a compulsory requirement of stated institution customers. Furthermore, the home worker testified that the customers required high quality in apparel making. A respondent who supplied goods to a local exporter MNE testified that an inspector from the customer inspected the workshop every day for the duration of the contract. The auditor inspected and supervised the production process and dealt with any obstacles during contract and found solutions. Stated

institutions audit their suppliers by phone and site visits at least once during a contract. Local large firms audited their Batik suppliers by onsite visits once during the contract award period. International exporters audited their suppliers by email.

Local customers complained due to poor quality, inappropriate size, reworking the goods due to the dyeing process using natural dye, and textile scrap. The firms testified that scrap products were then reworked or returned with new products and then re-delivered to the customers. Extended delivery times for Batik painting and dyeing quality were allowed for export products. Working relationships between the firms and the customers have been built up over the last ten years. The respondents testified that new corporate customers were added to expand their market.

5.6.2 Information Concerning the Suppliers and the Materials the Supplier's Supply

In general, information regarding SMEs and home worker suppliers is presented in Appendix D11. The raw material of Batik apparel was fabric. Materials vary from cotton, rayon, polyester, and silk. The other materials were chemical and natural dye stuffs, rosin, yarn, buttons, and label tags. Boxes and plastic were used to pack the goods. Information regarding the suppliers was as follows. Raw materials were supplied by the textile import distributor and agent, chemical agents and distributors, local textile company, and stated forestry. All of raw material suppliers' were located close to the firms.

The textile supplier selection stage was started by samples being offered to the supplier and then the textile samples were tested. Once it was passed, negotiations in terms of price and delivery time were agreed and then the contract was signed. In general, the firm as the focal company was more powerful than the suppliers. The length of a working relationship can vary from six months to thirty years.

5.6.3 Information Regarding Sustainability Management Practices

Appendix D11 depicts information with respect to sustainability perspectives of SME owners and home worker. The SME owners were aware with regard to business sustainability and triple bottom line sustainability. Economic sustainability was the highest priority followed by

social and environmental. The respondents confirmed that innovation by launching new trends and spreading their relationships, actively promoting their products through exhibitions and on-line were the way to retain sustainable business. The export producer and the supplier to the export firm stated that they did not have liquid waste management. They stated that liquids and chemical waste flowed directly into the river. Furthermore, the owners testified that their customers did not audit water waste management.

The majority of respondents pointed out that their international customers tend to test the quality as the first criterion, and then consider the waste management system. The international customers who conducted on-site visits did not ask about workers' rights. The respondents pointed out that the majority of local customers did not request information both on water waste management system and workers' right. The SME owners testified that they were not obliged to comply with local standard wage. However, the SME owners stated that they provided benefits such as accommodation for single workers, health benefits and partial scholarships for workers' children. The owners pointed out that the government did not do much to prevent illegal trading in textiles and apparel from overseas as the goods massively supplied the domestic market. The SME owners testified that factors such as maintaining good relationships with previous customers, maintaining good quality and relationships between the owner-customers, and focusing on selling the goods for stated organisations, maintaining the firm's reputation as a high quality apparel maker, setting up written standardisation in apparel production processes were the way to maintain economic sustainability.

The SME owners testified that social sustainability practice was implemented by giving equal opportunity to promote the workers, regular meeting with the employees, providing benefits for the workers and treating the workers equally were part of their social sustainability practices. Joining in communal waste water management systems, involvement in training in natural dyeing processes provided by the NGO and authority, developing private waste water management systems were examples of environmental sustainability practices. Factors such as unhealthy competition among other Batik producers, less support from the government to promote the goods overseas, price wars among SMEs, copying of the goods illegally by overseas producers, low priced illegal goods from overseas, black campaigns in term of environmental waste management, unfairness, shortages in good stamping artisans were challenges in retaining a sustainable business.

5.6.4 Key Learning from Interviews with MNE Owners and Home Workers

Three different stages of the Batik production process were identified, namely Batik textile and apparel production process, Batik textile production process and Batik apparel production process. As a result of point one above, three different mappings of Batik SME supply network structures were identified. These were Batik textile and apparel supply networks, supply networks of Batik apparel, small firm and supply networks of Batik textile exporters.

Key characteristics of sustainable business practice were highlighted. These respondents were aware with regard to sustainable business. The most sustainable practices applied to their business were economic sustainability followed by social and environmental. The SME owners testified that there were no rules and regulations in terms of workers' rights such as wages, benefits, and health and safety. Therefore, workers' obligations and rights were only based on unwritten consensus among other neighbourhood firms. However, treating their workers better resulted in social movement as the firms were located in the residential area.

There were no regulations with regard to compulsory action in built waste management systems for SMEs. The majority of respondents testified that they received aid in establishing communal waste management systems from the authority and international NGO. However, there were numerous SMEs who did not provide a waste management system due to such firms refusing to join the local Batik Association. Furthermore, there was numerous training in Batik textile production processes using natural dye stuffs provided by the authority and NGO.

It was concluded that there were no rules and regulations to force SME owners to build waste management systems. In addition, the SMEs have no obligation to comply with workers' rights according to national law. However, a number of SMEs were aware that implementing social and environmental sustainability practices was good practice in promoting their firms nationally and internationally. Table 5.10 presents drivers and challenges in adopting sustainability practices with respect to sustainability standards as a benchmark to implement it in SMEs.

Table 5.10 SME owners perspective regarding drivers and challenges in adopting Triple bottom line sustainability in accordance with sustainability criteria in textile and apparel industry. (Source: own illustration)

Sustainability criterion	**Social sustainability**	**Environmental sustainability**	**Economic Sustainability**
Human Resource Management	**Drivers:** - Good relationship with workers reduces societal problems. - HRM good practice as family's value over generations. - Regular meetings with workers eliminates disharmony among workers.	**Drivers:** - Waste management system training to permanent workers in dye processing was a necessity as those workers were the first-line in practicing waste management system.	**Drivers:** - HRM good practice minimising labour-turnover. - A good relationship with leader of home workers reduces product shortage.
	Challenges: - There was neither regulation nor consensus among other SMEs with regard to workers' rights and obligations that was creating turmoil among workers and SME owners - Expert Batik artisans tend to be self-reliant Bad practice in taking-over expert-artisan among SMEs owner.	**Challenges:** - How to convince workers to participate in environmental management workshops provided by third parties for free as the workers thought that the workshop contribute nothing to them. - How to convince senior worker to actively involving in health and safety -	**Challenges:** - How to reduce extra production costs due to sudden changes in human resource. - How to maintain good book keeping as manual book keeping gave an inaccurate record. - Workers tend to absent from work without prior-notice. - High labour turnover caused shortage of goods. - How to gain and keep worker loyalty.

Table 5.10: (Continued)

Sustainability criterion	Social sustainability	Environmental sustainability	Economic Sustainability
Health and safety	**Drivers:** - Opening the work plant to external visitors eliminate bad news in improper health and safety practice. - Good practice in health and safety acknowledged by the authority resulting in invitations from the government body to promote the goods at exhibitions overseas for free.	**Drivers:** - Provide manual instruction and safety equipment in dyeing production processes were a necessary action in subsequent with waste management system.	**Drivers:** - Good practice in health and safety minimising end-product shortage due to accidents at work and absence. - Opening the production areas to visitors can increase demand for goods significantly.
	Challenges: - How to reach consensus among neither SME owners in establishing health and safety standards as there were neither regulation nor law in implementing good practice in health and safety. - How to encourage workers to wear standard health and safety equipment as the workers less active to do so. - How to persuade senior workers to read and practice new and modest working procedures as they were more comfortable with the old one.	**Challenges:** - How to persuade senior workers as they tend to discount health and safety practices. How to disseminate good practice to workers with regard to health and safety action as the workers have less awareness in implementing it during working hours.	**Challenges:** - Providing proper health and safety equipment was costly as the workers tend not to use it. Accidents at work caused down time in the production process.

Table 5.10: (Continued)

Sustainability criterion	Social sustainability	Environmental sustainability	Economic Sustainability
Environmental practices	**Drivers:** - Good practice in waste management system reduces public protest and bad publicity. Good will from SME owners in conducting environmental practice.	**Drivers:** - Performing waste management systems in dyeing production processes as communal water waste management systems were provided free. Numerous workshops and training assist by the government and NGO in waste management system.	**Drivers:** - Implementing environmental practice can boost demand from local MNEs and overseas. - Producing Batik textile using natural dyeing process creates high demand from overseas.
	Challenges: How to diminish black campaign from individuals and organisations as they pointed out that Batik textile production processes caused water pollution.	**Challenges:** - How to boost awareness among SME owners regarding environmental practice as there were no mandatory actions to implement waste management systems. - How to persuade SMEs owner to participate in communal waste management system as it was voluntary.	**Challenges:** Using natural dyeing needs extra time in finishing the goods.
Legal compliance	**Drivers:**	**Drivers:**	**Drivers:** - Forming legal firm was compulsory to apply for funding from financial institutions and to supply to stated organisation.
	Challenges: - Procedure to formalise the organisation is costly	**Challenges:**	**Challenges:** Tax obligatory as load for the SMEs owner who forming their firm legally

5.7 Summary

This Chapter explored evidence from six respondent groups of Indonesian textile and apparel industry stakeholders: SME owners, SME and MNE workers, Government Agency, MNE managers, NGO, home workers. Lessons learned from the case study highlighted two key areas in customer-supplier relationships, drivers' and challenges in implementing sustainability practices.

Supplier-customer relationship among the enterprises were acknowledged as being customer-driven. Customer organizations were actively involved as decision makers through all of stages of process production. The International customer organizations required codes of conduct as compulsory action through the entire supplier selection process. Key points of the codes of conduct in social sustainability standards are a focus on basic worker' rights such as wages at the same level as local wages, and workers' evacuation procedure in case of fire accident. This were considered as important points on site visit audits. Irresponsible social business practices against codes of conduct in terms of social sustainability was considered as intolerable actions and apparel producers were fined or blacklist were broken. Water waste management system were acknowledged as key criterion in environmental sustainability. Furthermore, international environmental standards such as ISO 14001 were not compulsory for the textile and apparel suppliers, however, the supplier organizations awarded the certificates gained benefits in site visit assessments. The supplier organizations acknowledged that economic sustainability refers to profit-oriented action through production processes.

The MNEs were more mature in adopting sustainability practices. In contrast to MNEs, SMEs exported their goods through middle-men and exporter agents. To overcome barriers regarding obstacles in adopting sustainability practices, the SME Forum was acknowledged as a formal organisation with bargaining power to negotiate with both profit and non-profit organisations. The SME industrial cluster was actively involved in adopting environmental and social sustainability practices to boost economic sustainability. As the efficacy of implementing social and environmental sustainability were highly dependent on individuals, improved understanding of actors who are dominant among the members in implementing good practices is needed. Result from a study in the Industrial cluster is presented in Chapter 6.

Chapter 6
Visualise Sustainable Supply Networks in Indonesian Textile and Apparel Industrial Cluster Using Social Network Analysis Approach

This Chapter reports from the results qualitative cycle in regard to the effectiveness of cluster industry enterprises to boost sustainability practices. The relationships and interdependencies between actors, agents and organizations within SMEs supply networks needed to deliver sustainability practices are quantified using social network analysis. In addition, supply networks maps are visualized using graph theory not only to reveal information of individual activities in SMEs Industrial Cluster but also to highlight information flow within five SMEs. Case study results show that actors within batik SMEs and the batik industrial cluster have a major role in improving the implementation of sustainability practices. The structure of Chapter 6 is presented at Figure 6.1.

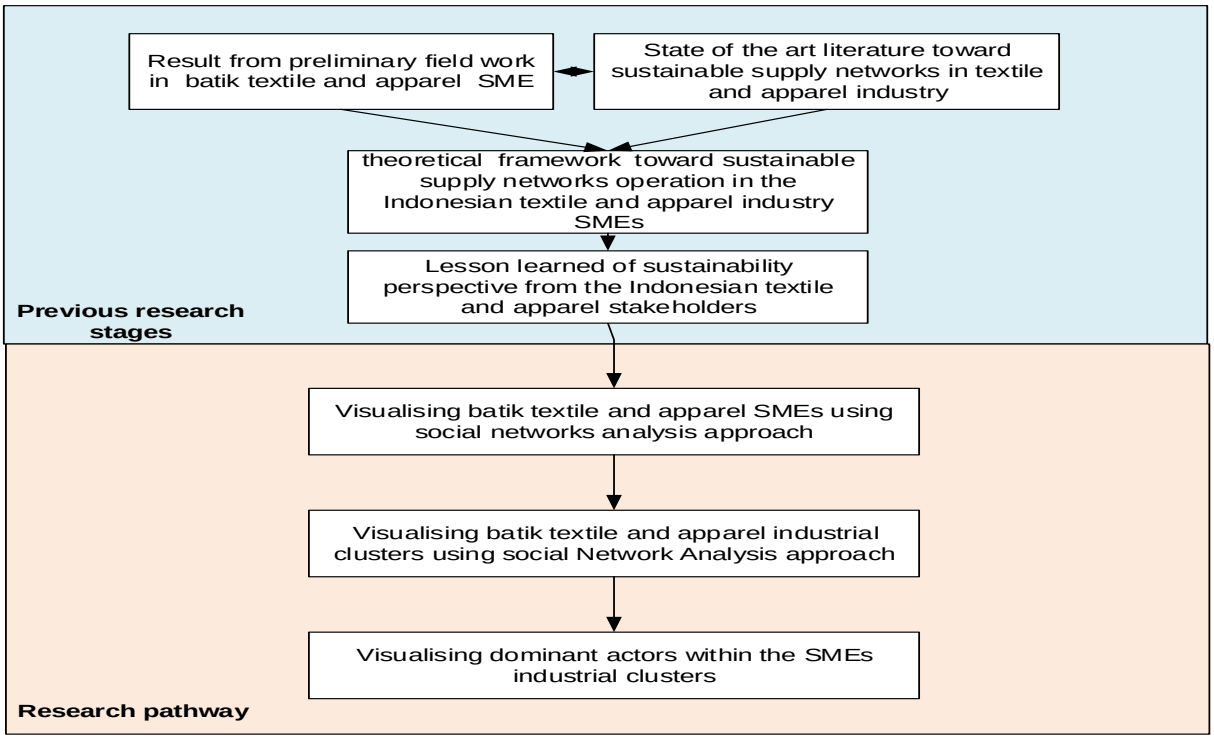

Figure 6.1 Research structure of Chapter 6

Figure 6.1 demonstrates that this chapter begins with case study evidence and a state-of-the-art literature review. Consequently, a theoretical framework is proposed. The case study led to the visualisation of batik textile and apparel SMEs and the visualisation of the dominant actors in the SME cluster using a Social network analysis (SNA) approach. This chapter consists of four sections. Section 6.1 summarises the previous research and the lessons learnt, followed by Section 6.2 which provides an overview of the supply networks analysis approach. The next section constructs the visualisation of five batik textile and apparels SMEs, and leads to Section 6.4 which visualises the dominant actors within SMEs' industrial clusters. Finally, a discussion is presented in Section 6.5.

6.1 Key Learning from Case Study Evidence and Literature Review

The case study findings in the Indonesian textile and apparel industry and their stakeholders clarified two questions, namely surrounding supply network structures and sustainability practices, drivers and challenges. Furthermore, the case study highlighted that there were neither local regulations nor customer pressure to adopt social and environmental management systems in textile and apparel SMEs. It also revealed that SME industrial cluster was a good alternative in terms of both increasing awareness and implementing social and environmental management practice.

In addition, key respondents from various stakeholders agreed that collaborating with internal and external stakeholders is beneficial for pushing sustainability efforts into practice. However, it also confirmed than joining industrial cluster associations was voluntary and the industrial cluster did not benefit its members.

The literature review highlighted that the main social sustainability issue in the textile and apparel industry was *sweatshops*, which have been increasing in spite of numerous actions against them, namely anti-sweatshop campaigns established by organisations, individuals, and government bodies. Furthermore, the case study evidence in terms of the sustainability of supply networks in textile and apparel SMEs was inadequate.

Based on the lessons learnt from both case study evidence and the literature review, this chapter presents a way of visualising five different structures of SMEs supply networks using social network analysis in order to compare and contrast the information flow and contractual relationships within supply networks. In addition, identifying networks of SME industrial

clusters and actor domination within clusters is important for providing recommendations to other Indonesian SMEs that wish to adopt social and environmental sustainability practices.

6.2 Overview of the Social Network Analysis approach

Social network analysis is an analytical method that uses a basic assumption of the importance of relationships among entities within entire networks (Wasserman & Faust, 1994). A number of basic assumptions with regard to social networks are explained as follow (Prell, 2012:9):

- Actor, vertices and nodes: social entities that are linked together
- Ego: focal actor of interest
- Alter: the actor to whom an ego is tied
- Tie: linkages: A is friends with B: A is tied to B
- Relation: a specified set of ties among actors
- Actor attribute: information regarding the actor
- Ego network: social network of a particular focal actor, ego, ego alter.
- Social network: a set of relations that apply to a set of social entities and any information regarding these actors and relations.

In general, Social network analysis is used to map existing relationships between actors and then represent them in a graph. Social network analysis provides a measurement of actor relationships in line with social relations. There are two network variables namely structural and composition. Structural variables are calculated for a pair of actors while the calculation of a composition variable is an attribute of the actor. Two approaches that represent adaptive networks are graph theory and socio-metric. One of the most useful methods of explaining social networking using graph theory is shown with dots that are connected by lines. Graph theory visualisation is called a Socio-gram. Socio-metric is related to the positive and negative effects of relationships such as likes or dislikes, and friends or enemies among a group of people. This relational data in a two-way matrix is called a socio-matrix. Socio-matrices are primarily used to support graphs and to quantify the relationships in the graph into the matrix.

The relationships between actors and their ties are divided into two groups, namely one-mode and two-mode networks. One-mode networks represent relationships between only one group of actors, including transactions, transfers of resources, interactions, and movements. Two-mode networks, on the other hand, study two groups of actors with a variety of activities. Social capital theory is used to identify the mechanism of information flow that exists in the

relationship. Weak-tie social capital theory focuses on the strength bonds between actors while structural holes explain the relationship and movement of individual.

Social network analysis has two types of standard analysis, the ego network analysis and complete network analysis. Ego network analyses concern the relationships that arise from a single point, individual or unit. This analysis processes information about the people who interact with them and the relationships between those individuals. Ego network analysis yields information on the quality of the individual networks. The number of relationships that may be obtained is limited and that there may also be a network of external contacts. Complete network analysis, on the other hand, is an analysis that tries to see all sorts of relationships that occur. The unit of analysis of SNA is divided into three groups, namely the dyadic level, actor level and network group level.

Centrality indicates position within a given web. In addition, local centrality relates to the number of relationships among entire points in the network. High centrality shows a more centralised point. Global centrality is calculated by adding all the paths from a given point to another point in the network (Scott, 2000). Social network analysis is facilitated by a number of software applications that calculate various measures, from simple calculations to the more advanced. UCINET software is used to analyse socio-metric as well as other calculations, such as density, degree, or centrality.

6.3 Visualising Five Batik Textile and Apparel SME Supply Networks Using a Social Network Analysis Approach

Mapping supply networks of five batik apparel SMEs using social network analysis is the first visualisation. Five different SME supply networks were drawn from the findings of the case study. The five supply networks include a Medium-sized firm, a home worker apparel, a medium-sized exporting firm, a small-sized apparel firm, and a small-sized firm that outsources for an apparel exporter. The supply network is based on material flow. The data gathered from the case study is transferred into matrix a x b. Score 0 is given for one way relations between actors and score 1 is given to two way relations between actors. Matrix of SMe supply networks is depicted in Appendix E1. The actors are defined as suppliers of raw materials, home workers, and outsourcing firms. The matrix then subtracts using UCINET software to produce a graph that captures the relations among the actors within the networks. Figure 6.2 presents a graph of the medium-sized firms' supply networks.

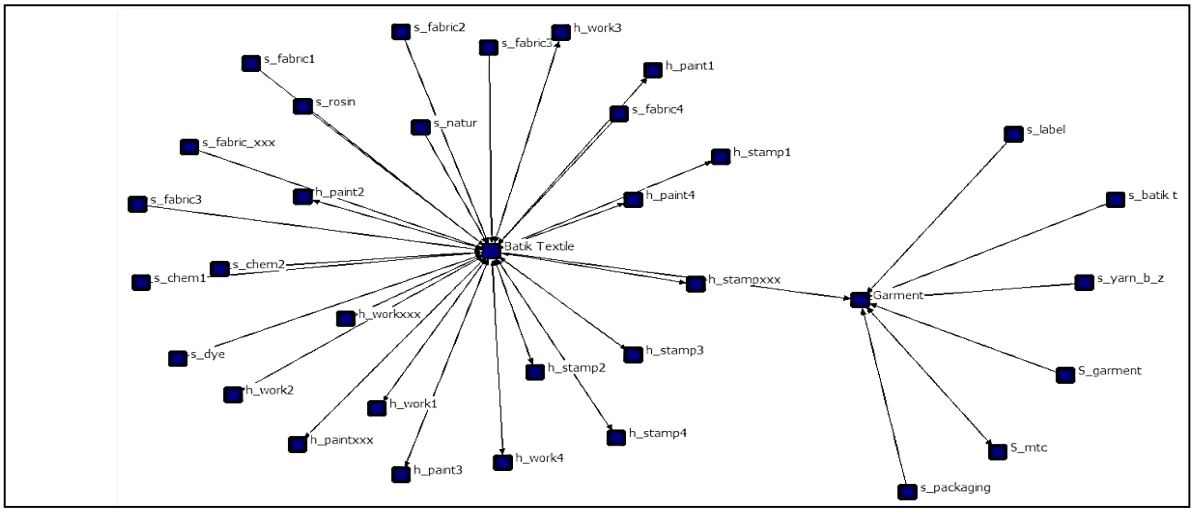

Figure 6.2 Graph of medium-sized firms' supply networks

Figure 6.2 shows that the supply networks consist of 65 ties. The production process for textile includes relations with numerous suppliers. The relationships of material flow are shown with arrows, it is considered to be one-way, centralised structure in which the firm is the focal company within entire networks. The graph also shows that the apparel firm has textile and apparel suppliers. The potential for social and environmental sustainability is traced from the goods along the production process within the firm. This supply network represents the majority of medium-sized firms' responses in this case study.

Figure 6.3 presents the supply networks of small-sized batik apparel firms. Matrix of the firm is presented in Appendix E2. The actors include fabric suppliers, trimmed material suppliers, home workers, and outsourced batik dye.

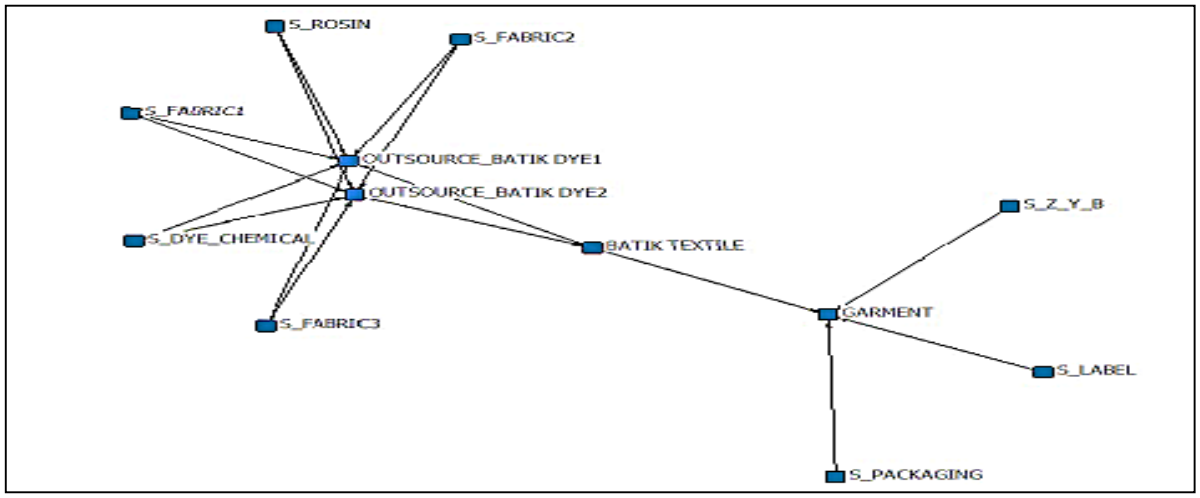

Figure 6.3 Graph of the supply networks of small textile firms

Figure 6.3 shows that these supply networks are simple and include 12 ties. This small firm supplied fabric to a batik dyer and, once it was finished, the apparel marker is produced in this firm. The potential issues of sustainability visualised in this supply networks graph are environmental and social sustainability.

A graph showing small firms' outsourcing for larger textile exporting firms is presented in Figure 6.4. Detailed matrix of the firm is presented in Appendix E3. This visualisation portrays six suppliers, namely home worker batik dyers, including both chemical and natural products for the batik textile production process. Social and environmental sustainability issues may potentially arise within the material flow of the supply networks.

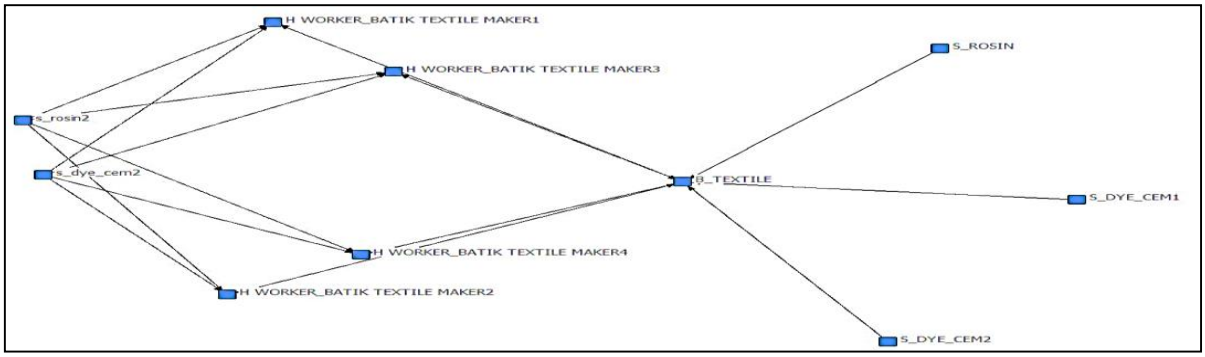

Figure 6.4 Graph of the supply networks of small firms supplying to textile exporter

The next figure (6.5) depicts the supply network visualisation of apparel home workers. There are two actors as suppliers, namely trimmed and home worker sewer. This graph is considered to be a simple material flow. The social sustainability issues are traced in accordance with the graph. Matrix of the firm is presented in Appendix E4.

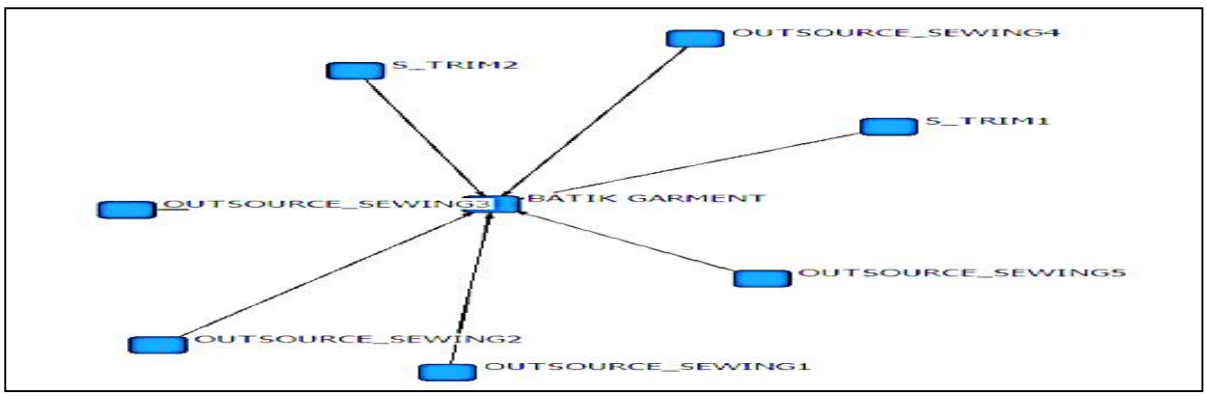

Figure 6.5 Graph structure of apparel home worker supply networks.

Figure 6.6 shows the supply networks of medium-sized batik export firm. The graph is circular as it represents simple and one way relations.

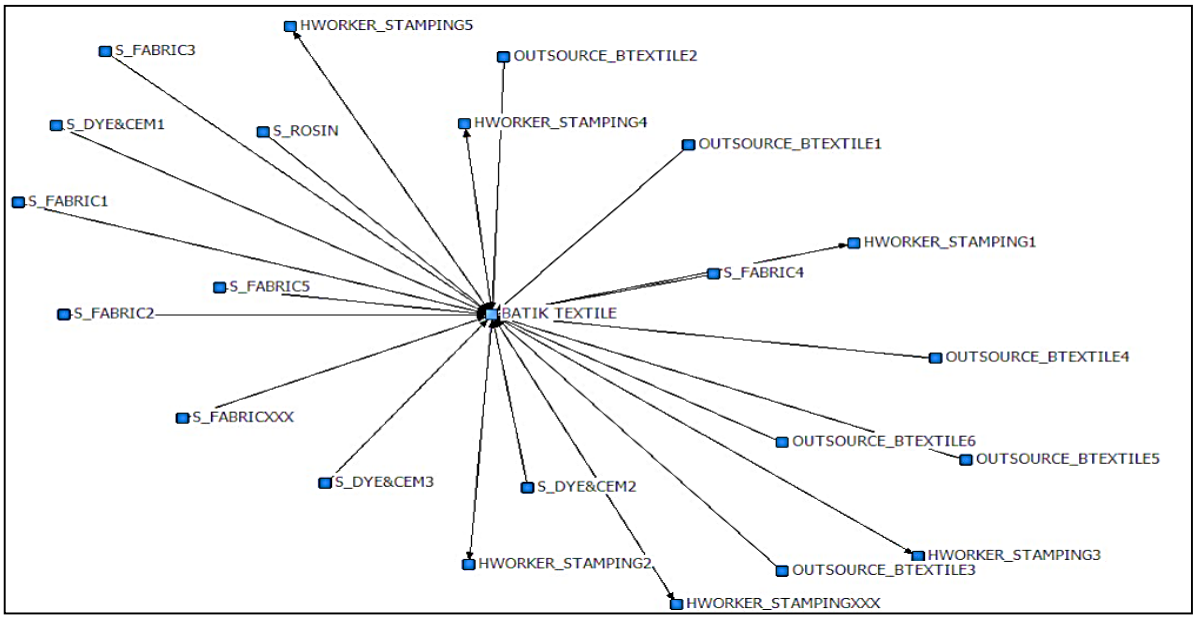

Figure 6.6 Graph of medium-sized export firm

Figure 6.6 shows that the firm has a number of suppliers in terms of fabric, chemical goods, batik textiles and home worker batik stamping. It shows that the supply network structure is centralised and the firm is considered as the focal company to their suppliers. Social and environmental aspects of sustainability are shown in the supply networks. Appendix E5 depicts matrix of the firm.

The graphs of five different supply networks shown above represent star network as the firms are focal companies throughout their networks. These graphs represent centralised networks as the firms have the power to choose their suppliers throughout their supply networks. The social network analysis approach can be used to quantify where power tends to lie throughout the supply networks. The approach is called ‘betweeness centrality’. The value of the betweeness centrality of the firm is high. In addition, it is shown in the graphs that social and environmental concerns potentially occur throughout SME supply networks.

A number of points can be drawn from these graphs regarding sustainability issues:

- Batik textile production processes are based on raw materials such as fabric which are then subject to a dyeing process. Rosin is a natural resource used in the contour stages.

One potential problem in the batik textile process derives from the effect of chemicals on water sources in the form of water pollution. However, it is shown from the graphs that natural dyes are also used in the production process. Therefore, the potential impact on environmental sustainability is likely lessened.

- The graphs show that the entire supply networks have outsourced suppliers in a variety of production stages, such as batik stamping and painting, the batik dyeing process, batik textiles, and apparel. Therefore, the majority of issues in terms of social sustainability can be traced based to the suppliers.

In line with the lessons learnt from the case study evidence that batik SMEs initiate the establishment of batik industrial clusters, the next analysis should explore how to develop and deploy stakeholder participation alongside SMEs supply networks to become more sustainable. The next section of this chapter explores two examples of batik SMEs industrial clusters using a social network analysis approach.

6.4 Visualising Dominant Actors in the Batik Textile and Apparel SME Industrial Clusters using a Social Network Analysis Approach

This section provides information about actor domination within industrial clusters in order to become more sustainable. As sustainability practices in SMEs are based on individual action, a Social network analysis approach is a suitable way of examining actor domination to deliver action on sustainability. The analysis is focused on ego clusters and central tendency in the web, as presented in Table 6.1.

Table 6.1 Social network analysis group and its stages

Network type	Notation	Output
Ego cluster network	Indegree, Outdegree, density	Structural web in SMEs industrial cluster
Centrality analysis	Betweenness, closeness	Actors' domination within SMEs industrial cluster in adopting sustainability practices

6.4.1 Visualising Dominant Actors within the A SME industrial Cluster

Established in 2004, the A Industrial Cluster was the first formal batik SMEs industrial cluster and became a role model for developing SME Industrial Clusters in Indonesia. This organisation was the first SME cluster that received grant from a German NGO to initiate the establishment of a communal water waste management system in 2007. Most members of the organisation are SME owners. In addition, the area is surrounded by numerous batik firms from neighbouring villages. However, a number of SME owners within the village are not members. Currently, there are 56 members that are divided into three categories, as presented in Table 6.2.

Table 6.2 SME members (Source: SMEs cluster, 2012)

Business category				**Firm size**	
Textile and apparel	**textile**	**Apparel**	**showroom**	**Small**	**medium**
18	6	10	22	32	24

In addition, there are three NGOs and two local government officers that are actively involved in the organisation. It was concluded from the interviews that actors that are actively involved in the organisation's agenda include textile and apparel producers, NGOs and government officers, MNEs, and a medium-sized firm that supplies to an export firm. In order to transform the data into visualising interdependencies among actors within supply networks, 31 actors are considered and included in the analysis using the social network approach. The codes for each actor and their attribute is provided in the appendix.

The next stage in analyse the data is to transform it into matrix a X b with binary numbers. 0 indicates relations and 1 indicates no relations among actors. Matrix of Industry Cluster A is presented in Appendix E6. Once the matrix is complete, the next stage is to analyse it using UCINET software to visualise a graph, as is shown in Figure 6.7. This figure shows that the shape of the graph makes it a star graph. The interpretation of stars indicates limited, one-way relations among actors. Furthermore, it is shown that three actors, namely batik PK, batik PL, and batik MH, are the actors that have strongest relationships within the entire supply networks. Those three actors are they own batik firms.

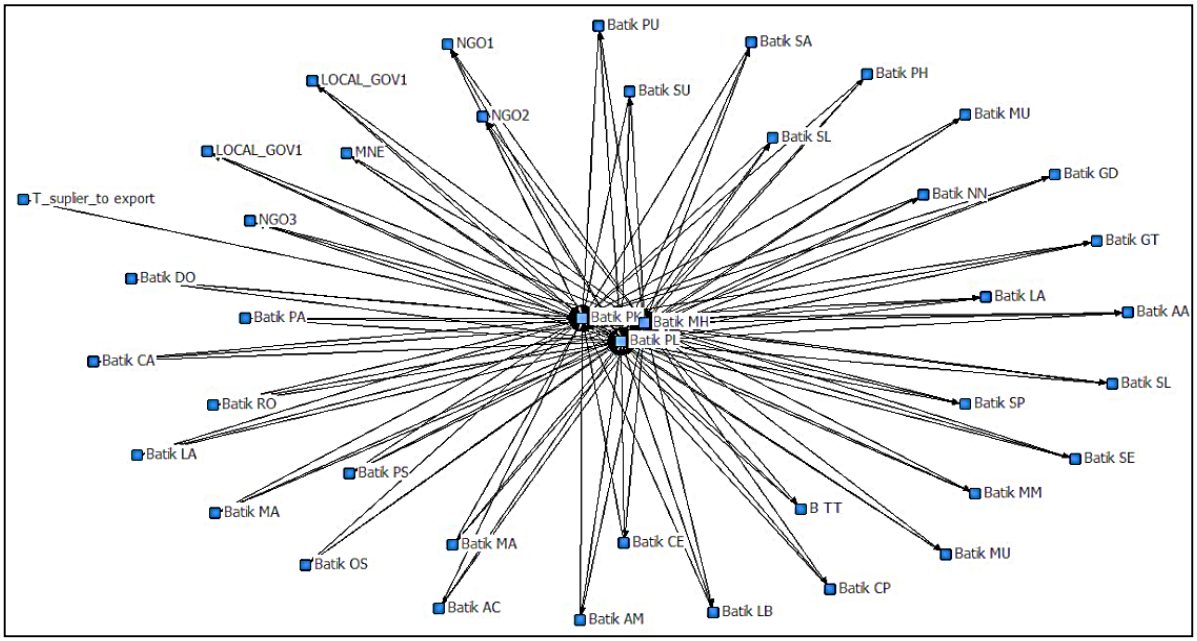

Figure 6.7 Graph of the A SME Industrial Cluster

The next stage is to calculate centrality among the actors in the networks. The degree of centrality is based on betweenness, indegree and outdegree as follow:

		Betweenness	nBetweenness
22	Batik MH	1281.000	82.115
14	Batik PK	111.000	7.115
4	Batik PL	72.000	4.615

It is shown that batik MH is the actor with the most influence across the whole networks, followed by batik PK and batik PL. Batik MH is the initiator as well, as the chief of the A SME industrial cluster. The actor also initiates the development of the batik production process using natural dyes. The three actors also gave examples of social sustainability. The other active member of the SME industrial cluster is an MNE that resides around 20 kilometres away from the industrial clusters. The MNE gives regular training in both managerial and environmental aspects to the organisation's members

Three batik firms also have highest score as shown as follow:

		Degree	NrmDegree	Share
14	Batik PK	40.000	100.000	0.174
4	Batik PL	39.000	97.500	0.170
22	Batik MH	39.000	97.500	0.170

6.4.2 Visualising Dominant Actors within the B SME Industrial Cluster

The next example is the B SMEs Industrial Cluster. This industrial cluster resides in a different region from the A Industrial Cluster. The organisation is considered a legal Industrial Cluster and was established in 2007. Unlike the first sample organisation, membership of this industrial cluster varies and includes SMEs owners, individuals, material suppliers, and batik trainers, as presented in Table 6.3.

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Table 6.3 Member classification

Member classification	Number
Textile producer	11
Apparel producer	5
Batik and apparel producer	19
Individual	8
Material supplier	1
Batik making trainer	1

There are 46 providers present in this matrix, including two government authorities. It found that this SMEs industrial cluster does not have a NGO as an active member. This organisation also received a grant from the Indonesian Ministry of Environment to build a communal water management system in 2009, and it resides in an area surrounded by numerous big apparel firms as well as SMEs. Membership is voluntary, as in A Batik Cluster. The socio-metric designed is a x b. Appendix E6 represent matrix of Industry Cluster B. Once the matrix was

done, the next stage was analysing it using UCINET software to visualise the interdependencies among actors within the entire organisation networks, as presented in Figure 6.8.

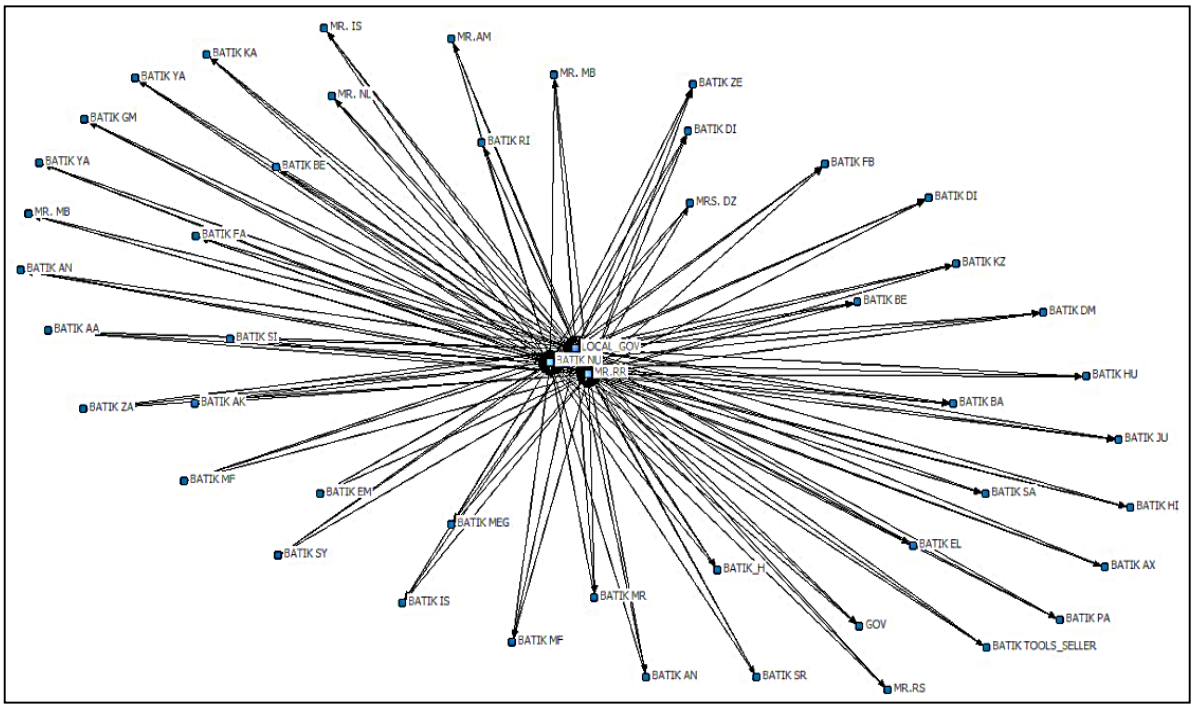

Figure 6.8 Graph of the B Industrial Cluster

It can be seen from Figure 6.8 that the shape of graph makes it a star graph. Three actors, namely Local GOV, Mr. RR, and Batik NU are the central actors that have at least one relationship with all the actors in the network. These actors are an individual, a government officer, and a medium-sized batik owner. Respectively. Mr. RR is the leader of the organisation. It was revealed the Mr. RR actively gives help in dispute mediation between SMEs workers and the neighbourhood, as he has no conflict of interest in the organisation. The local government representative is actively involved and positively contributes towards the development of the organisation. In addition, Batik NU owner has been a batik textile and apparel exporter for three decades. The Batik NU owner provides a good example of environmental management practices by providing an individual waste management system. Furthermore, the owner is a role model for better working conditions and the workers of this SME receive wages above local wage standards, as well as health insurance and pension insurance. The centralisation calculation is presented as follows:

		Betweenness	nBetweenness
2	MR.RR	1242.000	55.053
48	LOCAL_GOV	866.000	38.387
1	BATIK NU	15.000	0.665

This data indicate the strongest relationship as well as intervention across the entire networks. The three actors from the three stakeholders have strong degrees of influence among other actor members and can intervene to boost sustainability practices.

		Degree	NrmDegree	Share
1	BATIK NU	48.000	100.000	0.170
2	MR.RR	48.000	100.000	0.170
48	LOCAL_GOV	48.000	100.000	0.170

6.5 Summary

This Chapter provided information from the quantitative cycle by visualising contractual flows of five different batik and textile SMEs using the social network analysis approach of material flows and preliminary indications of sustainability aspects in textile and apparel SMEs were mapped. In addition, exploring two batik SMEs industrial cluster in mapping stakeholders' participation in terms of sustainability practice using the social network analysis approach provided both qualitative and quantitative measurements in regard to the indication of actor domination within supply networks. The visualization allowed key actors within the industrial clusters to be identified. These actors could become role models for others wishing to implement social and environmental sustainability.

Chapter 7
Conclusions and Future Work

In a recent challenge opportunity, Marks & Spencer (M&S) stated their aspiration for "... *ways to improve the efficiency and effectiveness of systems to promote wider adoption and promotion of sustainability standards across global supply chains'.* Embracing sustainability practice throughout the entire supply network is essential if multi-national enterprises such as M&S are to deliver their challenging sustainability goals. M&S outline three key weaknesses in current sustainability assurance systems (SC Certification, 2015):

- Fragmentation: with multiple on-site audits and standards applied to supplier organizations;
- Inconsistency: reliability and variability of auditors' competence are specific issues;
- Inefficiency: there is a lack of flexibility where audit methods and tools cannot be tailored to meet the needs of individual supplier organizations.

Findings from this research confirmed these weaknesses. For example, all MNE participants testified that assessment processes for lower tier suppliers, from second tier and below, were time consuming to use and not well suited for middle and small sized suppliers. These participants reported that on-site visit audits were conducted by third party independent auditor organizations and tended to produce inconsistent results due to variability across auditors. Moreover, the implementation of social and environmental sustainability practices to support sustainable business was regarded as a lower priority in developing countries such as Indonesia, in part due to price wars among competitors from other countries.

This research improved understanding of sustainable supply network operations in the Indonesian textile and apparel industry by answering two research questions:

1. What do textile and apparel enterprises in developing countries such as Indonesia perceive as requirements for sustainable business practices imposed by customers?
2. How do Indonesian textile and apparel enterprises comply with these requirements and what are opportunities for further improvement?

The chapter is structured in accordance with the key gaps identified in Chapter 2. Key contributions related to the assessment of sustainability are presented in Section 7.1. This is followed, in Section 7.2, on contributions in the visualisation of networks where individual SMEs are captured and, in Section 7.3, on the potential of industry clusters.

7.1 Assessment of sustainability practices in Indonesian textile and apparel enterprises.

Indonesian textile and apparel enterprises have adopted sustainability practices in accordance with codes of conduct of their international customers. The codes of conduct encompass six sustainability indicators: human resource management, health and safety, environmental practices, legal compliance, custom compliance and security standards. These six sustainability criteria have acted as drivers for the adoption of sustainability practices.

Methods to assess sustainability at SME level are not available. For this reason, this research gathered perceptions of Indonesian sustainability not only from MNE companies but also from SME enterprises and their stakeholders. Indonesian stakeholders commented on their organizations' compliance with sustainability requirements of international customer organizations. Key findings were that sustainability management practices in the Indonesian textile and apparel industry focus on attaining operational efficiency and effectiveness rather than social and environmental sustainability. However, the implementation of sustainability practices in developed nations is more mature than in developing countries and is having a knock-on effect on developing countries where there are increasing requirements to operate more sustainably. As a result, international customer organizations, as the majority buyers of Indonesian textile and apparel goods, focus on the implementation of social and environmental sustainability practices which are presented in codes of conduct as guidelines for supplier assessment processes.

Indonesian textile and apparel enterprises recognise the need to meet environmental, social and economic sustainability indicators but, from the field work, current industry practice focusses on the economic sustainability of their businesses. Some participants reported experiences and perceptions that companies focussing on environmental and social indicators tended to be less competitive with respect to other suppliers. For the middlemen and brokers to whom SMEs supply their products, the priorities are price and quality; after this, environmental sustainability is prioritised over social.

Supply network sustainability was evaluated through lessons learnt from in depth face to face interviews with six stakeholder groups from the case study supply networks. Each stakeholder group has its own perspective in regard to observing and practicing sustainability. The MNEs have extensive experiences in adopting customers' codes of conduct. Although each codes of conduct is developed independently by the customer, each typically covers five aspects: human resources management, health and safety, legal compliance and custom compliance. The MNE stakeholder groups strive to comply with these requirements to ensure business sustainability. In contrast, the SMEs and home-workers traditionally have been established over generations and have demonstrated their financial resilience and sustainability during national economic crises. However, there remain opportunities for improvement in their performance with respect to social and environmental sustainability. For example, several SMEs pointed to concerns regarding polluted water resources and providing limited facilities to their workers in order to make more profit. The majority of SMEs export their goods through middle men and export agents to supply unknown brands and low-end customer organizations. Establishing industrial clusters of SMEs is proving to be an effective way of addressing these concerns.

Two worker groups employed by MNEs and SMEs have contrasting experiences in terms of working conditions, workers right, and health and safety of workers. MNE workers benefit more as their conditions and rights are covered by legal regulations. In SMEs, on the other hand, workers tend to be less motivated to develop their skills through free training provided by national and international organizations. Thus, workers depend highly on the economic sustainability of businesses in order to maintain their jobs.

Government agencies have a roadmap to develop the industry and are actively involved in the international community where policies and programs are established in order to conduct responsible business. However, lack of coordination and a tendency for such programs to be led by individual and local government agencies to achieve targets in accordance with the industry roadmap were highlighted as weaknesses in maintaining business sustainability. Non-governmental organizations play an important role in moderating social conflict between industrial enterprises, government agencies, and workers. However, NGOs have to overcome conflicts of interest among their members.

The Indonesian textile and apparel enterprises involved in this study expressed commitment to delivering customers' sustainability goals and collect data needed to support customer audits. However, for the SME companies involved in this study, they only assessed their compliance

with customer requirements when required to do so by customers, e.g., as part of audits. ISO14001 is an international standard that focuses on environmental assessment. MNE companies that are certified against ISO14001 reported improved success rates in gaining contracts from customers. An opportunity for further improvement would be in the development of ISO14001 certification schemes that can be implemented by SMEs. A key issue lies in the ISO14001 requirement that compliant organisations have effective systems, e.g., for waste and water management systems and associated record keeping systems

7.2 Visualization of SME roles in supply networks

Literature on supply network mapping highlights that there is neither consensus on how to construct supply network maps nor sufficient empirical evidence in mapping industrial sector supply networks. The maps created in this research revealed explicit boundaries in structuring the supply networks, namely, supply-side, production-side and customer-side from the particular industrial sector. Other literature highlighted drawbacks both of realising triple bottom line sustainability in SMEs in developing countries and the availability of robust approaches to support companies in improving their sustainability. The maps created in this research highlighted dominant actors among groups of SMEs. There were identified in the field work as potential agents of change who could encourage other group members in adopting sustainability practices. Social network analysis was used as a means of identifying these dominant actors who are well connected with other affiliates of the network.

The roles of SMEs in supply networks were visualized using social network analysis. The social network analyses identified dominant actors and agents from the Indonesian textile and apparel SMEs cluster industries. Two batik textile and apparel industry clusters, namely batik SMEs cluster industry A and batik cluster industry B, were analysed. Four dominant actors (*Batik MH, Batik PK, Batik PL, MNE*) were identified in Cluster A, and three (*Mr RR, Local_Gov, Batik NU*) in Cluster B.

Four dominant actors within Cluster A were categorised into two respondents groups, *Batik MH, Batik PK*, and *Batik PL* are SME owners and MNE is a multi-national enterprise. *Batik MH* as the most influenced actor within the Cluster A, is a chief of SME industrial cluster and the MH SME is currently initiating the development of natural dye processing of batik textiles.

MNE is considered as one of the largest national textile and apparel enterprises and the *MNE* is located in the neighbourhood of Cluster A. The *MNE* has a regular program to assist Cluster A in the development of water waste management system and promoting goods to export.

The three dominants actors from Cluster B were categorised into three different respondent groups, Mr. RR is NGO, *Local_Gov* is government agency, and *Batik NU* is the owner of medium-sized batik textile and apparel enterprise. *Mr. RR* is the chief of batik Cluster B. *Mr. RR* is successfully involved not only to encourage cluster members in practicing waste management system but also mediating conflict between worker-owner within the cluster. *Local_Gov* is the official local government agency who successfully creates relationship with the other stakeholder groups to maintain sustainable business. *Batik NU* is initiator in the development of individual water waste management system as well as in providing workers' right and benefit in accordance with local minimum wages.

Key literature highlighted drawbacks both of practising triple bottom line sustainability in SMEs in developing countries and robust approaches to overcome such problems. This research highlight the benefits of dominants actors among group of SMEs as agents of change to encourage other group members as an effective approach to encourage the adoption of sustainability practices in SMEs in developing countries. In addition, based on the example given above, social network analyses was highlighted as a comprehensive approach that can be used to distinguish dominant actors.

With respect to the goal of achieving sustainability standards across global supply chains, SME owners and their workers did not have a strong awareness of the global supply network contexts within which they operate. For larger organisations, mapping techniques can be used to create supply network maps that can provide this contextual awareness. The supply network maps produced as part of this research demonstrated that mapping techniques can be applied to networks of SMEs. However, creating these maps is time-consuming and requires knowledge to which SME organisations do not usually have access.

7.3 Evaluation of Porter Cluster Theory adopted on supply network sustainability

A benefit of having produced the network maps was that they highlighted the clustering of SMEs around agents and middlemen. These clusters are legal entities within Indonesia and have access to Government support for the development of sustainability practices. However, in practice, strong leadership of some clusters means that the level of support across clusters is variable. From the cluster analysis reported in Chapter 6, some organisations, such as government and non-government agencies, are represented in multiple clusters. As a result, SME owners involved in the leadership of clusters gain improved access to potential customers.

The research found that groups of Indonesian textile and apparel SMEs have formed industry clusters supported by government programs. The goal of these clusters is to increase wealth generated from the sector. A key mechanism in achieving this goal lies in customers' perceptions of the social and environmental sustainability of the Indonesian textile and apparel industry as a whole. For example, one SME Cluster established communal water waste management system in order to prevent environmental impact from batik textile dyeing process. However, numerous batik SMEs have limited resources and knowledge to forming industrial clusters and those groups of SMEs did not participate in this research. Clusters are beginning to address this issue by putting systems in place that can be shared across their members. However, only a small number of industry clusters have such systems and none of the clusters involved in the study have ISO14001 certification.

7.4 Limitations of the research

This research was based on a single case of the textile and apparel industrial sector. It is often argued that information gathered from a single case study is at risk of being one-sided. Bias in this research was minimized by conducting field work with multiple respondents from multiple organisations within the supply network. However, conducting multiple case studies is strongly recommended in order to enrich real world evidence from different industrial sectors. Case studies from different industrial sectors, such as the furniture and fisheries industries, that both contribute positive economy impact and represent complex supply networks could be used to explore further the phenomenon of sustainability in the context of supply networks in

developing nations. For research focussed on textile and apparel, cases from other competitor countries are recommended.

Defining stakeholder groups as research participants is an important stage of case study research. Stakeholder strata in this case study were divided into six groups of respondents. In consequence, there was a lack of information from three stakeholder groups, namely, MNE customers, raw material suppliers, and end-customers. These respondents were not included as a result of limited access to approach them. Determining broader strata of respondent groups is suggested for future research.

The structure of the supply network maps produced in this research reflected the structure of production processes in textile and apparel MNEs and SMEs. However, information gathered from the supply network maps was insufficient for tracing pathways through second, third and fourth tier suppliers. As the Indonesian textile and apparel industrial sector is complemented by other industrial sectors, such as the chemical and farming industries, further investigation on ways of capturing multiple tiers of suppliers are needed. Further research is needed to determine whether the perceptions elicited in this research are shared across other industry sectors within Indonesia or across the textile and apparel industries in other countries.

The social network analysis approach was used in this study to what was quantified small to medium-sized enterprises and determining actors' relationships among SMEs stakeholders. Further exploration to visualize supply networks is needed not only among SMEs but also among MNEs and other forms of supply network collaboration between SMEs. Further research is also needed to provide mechanisms for textile and apparel enterprises to better assess (i.e., measure and evaluate) the sustainability of their organizations and the supply networks within which they operate. Emerging simulation methods, such as agent-based simulation, appear promising as tools to support the development and improvement of sustainable supply networks.

7.5 Recommendations for Future Research

Three areas for further research are outlined in this section and illustrated in Figure 7.1.

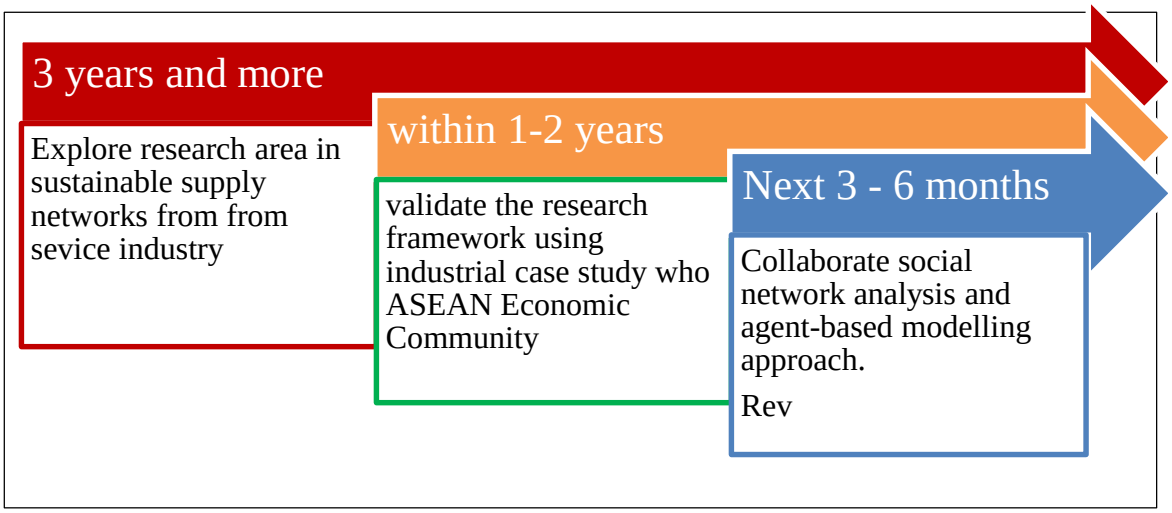

Figure 7.1 Time span of future research.

As can be seen in Figure 7.1, social network analysis and agent based modelling are highlighted as emerging research approaches for the visualisation of sustainable supply networks. In the short term, future research on the use of these two approaches is recommended. In addition, the theoretical framework presented in Chapter 2 was developed from the literature review and needs further validation.

For the medium term, further exploration related to the ASEAN Economic Community could be examined. This would not only improve the robustness and resilience of the national industrial sector but could also enable the study of other industrial sectors in Indonesia and textile and apparel suppliers in other ASEAN member such as Malaysia. For example, research could be carried out in collaboration with Choong & McKay (2014), to provide information on sustainability from the perspective of the palm oil industry in Malaysia, and with Utami et al (2014), to apply learning on resilient supply networks in the Indonesian fertiliser industry to the textile and apparel sector.

For the longer term, exploring emerging research areas in addressing sustainability could be expanded to include service industries. The theoretical framework and social network analysis approaches developed in this research could be applied in initial stages of the research. This would facilitate the further development and validation of the framework that is needed. With respect to the social network analysis approach, this could be used to analyse information gathered on the supply network structures and used to inform the creation of , agent based models that could be used by supply network managers in exploring interventions that could improve the sustainability of entire supply networks.

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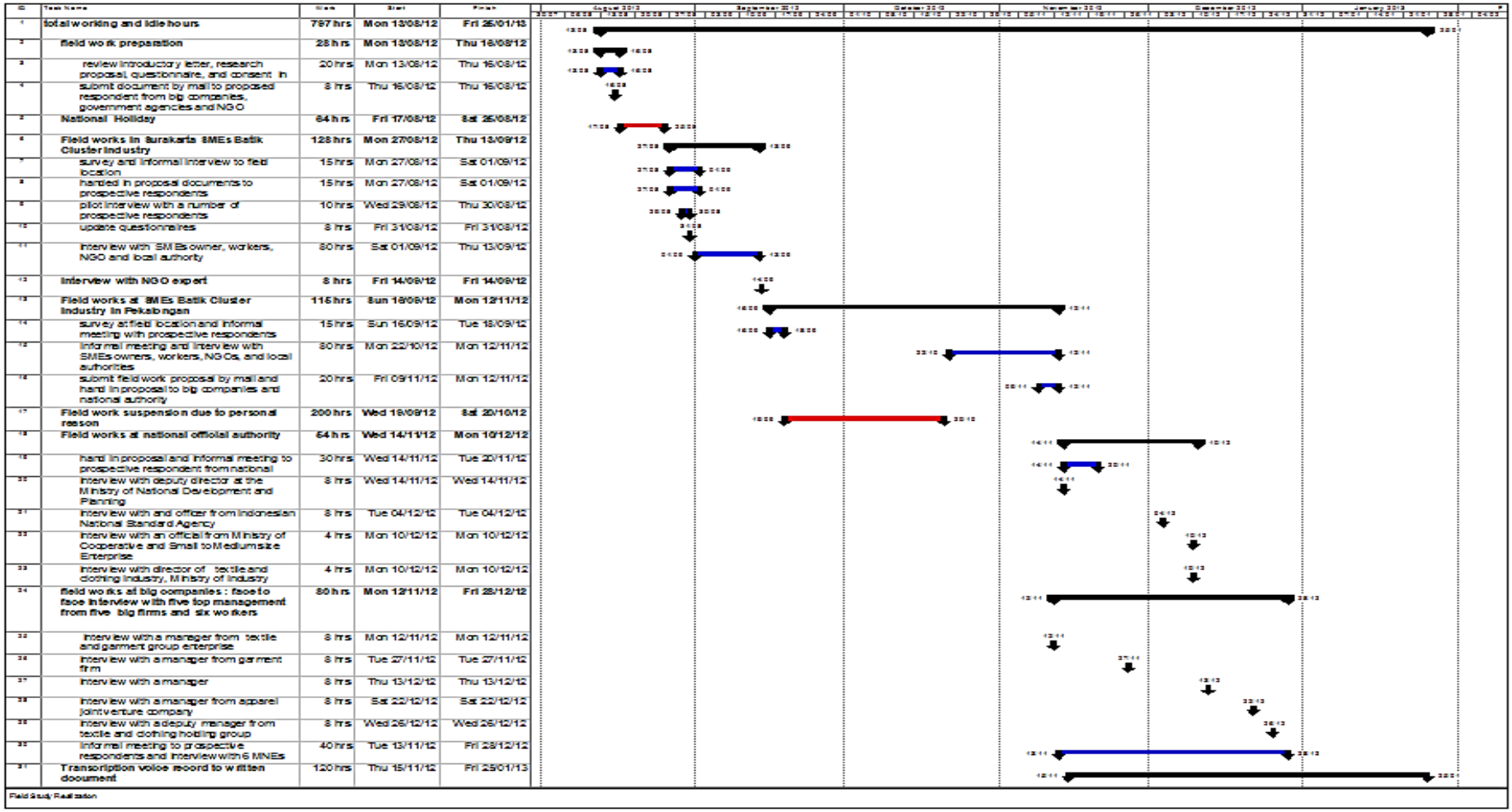
Appendix A Field work realization



ID	Task Name	Work	Start	Finish
1	**total working and idle hours**	**797 hrs**	**Mon 13/08/12**	**Fri 25/01/13**
2	**field work preparation**	**28 hrs**	**Mon 13/08/12**	**Thu 16/08/12**
3	review introductory letter, research proposal, questionnaire, and consent in	20 hrs	Mon 13/08/12	Thu 16/08/12
4	submit document by mail to proposed respondent from big companies, government agencies and NGO	8 hrs	Thu 16/08/12	Thu 16/08/12
5	**National Holiday**	**64 hrs**	**Fri 17/08/12**	**Sat 25/08/12**
6	**Field works in Surakarta SMEs Batik Cluster Industry**	**128 hrs**	**Mon 27/08/12**	**Thu 13/09/12**
7	survey and informal interview to field location	15 hrs	Mon 27/08/12	Sat 01/09/12
8	handed in proposal documents to prospective respondents	15 hrs	Mon 27/08/12	Sat 01/09/12
9	pilot interview with a number of prospective respondents	10 hrs	Wed 29/08/12	Thu 30/08/12
10	update questionnaires	8 hrs	Fri 31/08/12	Fri 31/08/12
11	interview with SMEs owner, workers, NGO and local authority	80 hrs	Sat 01/09/12	Thu 13/09/12
12	**interview with NGO expert**	**8 hrs**	**Fri 14/09/12**	**Fri 14/09/12**
13	**Field works at SMEs Batik Cluster Industry in Pekalongan**	**116 hrs**	**Sun 16/09/12**	**Mon 12/11/12**
14	survey at field location and informal meeting with prospective respondents	15 hrs	Sun 16/09/12	Tue 18/09/12
15	informal meeting and interview with SMEs owners, workers, NGOs, and local authorities	80 hrs	Mon 22/10/12	Mon 12/11/12
16	submit field work proposal by mail and hand in proposal to big companies and national authority	20 hrs	Fri 09/11/12	Mon 12/11/12
17	**Field work suspension due to personal reason**	**200 hrs**	**Wed 19/09/12**	**Sat 20/10/12**
18	**Field works at national official authority**	**64 hrs**	**Wed 14/11/12**	**Mon 10/12/12**
19	hand in proposal and informal meeting to prospective respondent from national	30 hrs	Wed 14/11/12	Tue 20/11/12
20	interview with deputy director at the Ministry of National Development and Planning	8 hrs	Wed 14/11/12	Wed 14/11/12
21	interview with and officer from Indonesian National Standard Agency	8 hrs	Tue 04/12/12	Tue 04/12/12
22	interview with an official from Ministry of Cooperative and Small to Medium size Enterprise	4 hrs	Mon 10/12/12	Mon 10/12/12
23	interview with director of textile and clothing industry, Ministry of Industry	4 hrs	Mon 10/12/12	Mon 10/12/12
24	**field works at big companies : face to face interview with five top management from five big firms and six workers**	**80 hrs**	**Mon 12/11/12**	**Fri 28/12/12**
25	interview with a manager from textile and garment group enterprise	8 hrs	Mon 12/11/12	Mon 12/11/12
26	interview with a manager from garment firm	8 hrs	Tue 27/11/12	Tue 27/11/12
27	interview with a manager	8 hrs	Thu 13/12/12	Thu 13/12/12
28	interview with a manager from apparel joint venture company	8 hrs	Sat 22/12/12	Sat 22/12/12
29	interview with a deputy manager from textile and clothing holding group	8 hrs	Wed 26/12/12	Wed 26/12/12
30	informal meeting to prospective respondents and interview with 6 MNEs	40 hrs	Tue 13/11/12	Fri 28/12/12
31	**Transcription voice record to written document**	**120 hrs**	**Thu 15/11/12**	**Fri 25/01/13**

Field Study Realization

Appendix B Introductory Letter to participant in Indonesian Language

Kepada:

Yth. Bapak/Ibu:

Di Tempat

Deangan Hormat,

Bersamaan dengan surat ini, perkenankanlah saya memperkenalkan diri terlebih dahulu. Nama saya Nina Mahbubah, staf pengajar jurusan Teknik Industri, Universitas Muhammadiyah Gresik – Jawa Timur.

Saat ini saya sedang cuti sementara waktu dari institusi asal dan menempuh studi lanjut program doktoral di School of Mechanical Engineering, University of Leeds, United Kingdom. Topik penelitian dalam studi saya adalah tentang manajemen berkelanjutan dari supply/demand networks dengan fokus utama perusahaan kecil dan menengah di Indonesia. Secara khusus, saya akan melakukan studi kasus pada dua klaster industri Usaha Kecil Menengah Batik yang berada di Surakarta dan Pekalongan.

Sebagai bagian dari penelitian saya tersebut, saya memerlukan data-data berupa informasi dari pelaku usaha, karyawan, dan pemangku kepentingan industri konveksi dan tekstil Indonesia.

Maksud dan tujuan saya mengirimkan surat ini adalah untuk mengajukan permohonan melakukan wawancara langsung dengan Bapak/Ibu dalam kapasitas sebagai narasumber di bidangnya masing-masing.

Sebagai bahan pertimbangan dari permohonan tersebut, berikut saya lampirkan dokumen pendukung sebagai berikut:

1. Surat keterangan dari Rektor Universitas Muhammadiyah Gresik, sebagai institusi tempat kerja.

2. Surat Keterangan dari University of Leeds, Inggris, sebagai institusi tempat belajar.
3. Surat kesediaan sebagai narasumber penelitian.
4. Panduan wawancara.

Besar harapan saya Bapak/Ibu berkenan mempertimbangkan dan mengabulkan permohonan saya untuk menjadikan Bapak/Ibu berpartisipsi sebagai narasumber pada penelitian ini. Terimakasih atas pertimbangan yang akan Bapak/Ibu berikan.

Hormat Saya,

Nina Mahbubah

Appendix C Questionnaires design in Indonesian Language

Panduan Wawancara

(Narasumber: Pemilik/Manajer Usaha Mikro Kecil Menengah dan Besar)

A. Informasi Tentang Jaringan Permintaan dan Penawaran Perusahaan

1. Informasi Umum

- Bagaimana garis besar struktur jaringan permintaan/penawaran pada perusahaan.
- Bagaimanakah hubungan kerja antara perusahaan dengan para pembeli-pemasok perusahaan.

2. Informasi Tentang Pembeli

- Informasi tentang organisasi pembeli (agen, distributor, konsumen akhir, dll) serta total pembelian dari para pembeli tersebut.
- Informasikan mengenai lokasi/tempat pembeli tersebut berasal (dalam atau luar negeri).
- Informasikan mengenai kriteria yang harus dipenuhi oleh perusahaan dalam melakukan perjanjian/kontrak penjualan dengan pembeli.
- Berapa lama hubungan kerja dengan buyer tersebut berlangsung.
- Bagaimana proses mendapatkan kontrak pembelian tersebut terjadi.
- Bagaimanakah prosedur kerja antara pembeli dengan perusahaan.
- Bagaimanakah proses audit/peninjauan berkala yang dilakukan oleh pembeli.
- Fihak manakah yang berpengaruh dalam hubungan kerja antara pembeli dengan perusahaan.

3. Informasi Tentang Pemasok

- Berapakah jumlah pemasok/supplier yang dimiliki perusahaan.
- Komponen/material apa saja yang di supply oleh pemasok tersebut.
- Informasi mengenai lokasi pemasok.
- Bagaimanakah prosedur pemilihan pemasok yang dilakukan oleh perusahaan.
- Bagaimana hubungan kerja antara perusahaan dengan para pemasok

- Apakah perusahaan melakukan hubungan langsung dengan para pemasok material yang dibutuhkan perusahaan?

B. Informasi Tentang Bisnis Berkelanjutan

- Apa pendapat atau persebsi bapak/ibu mengenai praktek bisnis berkelanjutan/sustainability?
- Apa persepsi Bapak/Ibu mengenai performansi perusahaan yang ditinjau dari penerapan praktek bisnis berdasarkan prinsip-prinsip lingkungan, ekonomi dan sosial yang berkelanjutan?
- Menurut pendapat bapak/ibu, bagaimanakah tolak ukur kesuksesan organisasi bia ditinjau dari penrapan bisnis berdasarkan aspek-aspek lingkunga, sosial, dan ekonomi berkelanjutan?
- Menurut pendapat bapak/ibu, apakah akan terdapat kontribusi nyata terhadap perkembangan perusahaan jika perusahaan menjalankan praktek bisnis berbasis prinsip-prinsip sosial, ekonomi, dan lingkungan yang berkelanjutan?
- Dari ketiga prinsip tersebut, prinsip manakah menurut bapak/ibu yang paling penting yang harus diterapkan di perusahaan tempat anda bekerja
- Menurut pendapat bapak/ibu, faktor-faktor apa sajakah yang menjadikan kekuatan dan kelemahan perusahaan untuk menjalankan praktek bisnis yang berkelanjutan tersebut?
- Faktor apa sajakah yang menjadikan peluang dan tantangan perusahaan dalam menerapkan praktek bisnis berdasarkan aspek aspek sosial, ekonomi dan lingkungan yang berkelanjutan?
- Menurut pendapat bapak/ibu, faktor-faktor apa sajakah yang dapat dilakukan pelaku usaha untuk meningkatkan performansi perusahaan berdasarkan penerapan praktek bisnis berdasarkan aspek sosial, lingkungan dan ekonomi tersebut ?
- Apa yang bapak/ibu ketahui tetang sertifikasi standarisasi berkelanjutan (sustainability standard certificate)?
- Apakah perusahaan Bapak/Ibu telah memiliki sertifikasi tersebut?
- Apakah manfaat, keuntungan dan kerugian yang didapatkan perusahaan yang telah mendapatkan sertifikasi standar sustainability tersebut?
- Apakah bapak/ibu akan mendaftarkan kembali untuk mendapatkan sertifikan standar sustainability jika jangka waktu sertifikasi telah habis masa berlakunya?

- Jika belum, bagaimanakah perusahaan bapak/ibu mengakomodasi persyaratan-persyaratan yang berhubungan dengan praktek bisnis berdassrkan prinsip-prinsip sosial, lingkungan, dan ekonomi berkelanjutan yang sebagai salah satu kriteria yang diajukan oleh calon pembeli (buyer)?
- Bagaimanakah upaya-upaya yang dilakukan pemerintah, lembaga swadaya masyarakat, ataupun fihak–fihak lainnya dalam mensosialisasikan tentang praktek bisnis berkelanjutan (sustainability) dan sertifikasi standar sustainability pada perusahaan?
- Sejauh mana peran lembaga pemerintah dan kemasyarakatan tersebut dalam membantu (misalkan memberikan konsultasi dan sosialisasi) tentang penerapan praktek bisnis berdasarkan prinsip-prinsip berkelanjutan(sustainability)?

Panduan wawancara

(Narasumber: Karyawan/Karyawati Perusahaan Kecil, Menengah, dan Besar)

A. INFORMASI UMUM

- Jelaskan secara singkat pekerjaan bapak/ibu.
- Berapa lama bapak/ibu berpengalaman bekerja di perusahaan tekstil atau pakaian.

B. INFORMASI MENGENAI HAK DAN KEWAJIBAN KARYAWAN

- Bagaimanakah prosesnya sehingga bapak/ibu menjadi karyawan di perusahaan ini.
- Apa kewajiban karyawan/karyawati di perusahaan?
- Apa hak karyawan/karyawati yang diperoleh dari perusahaan.
- Selama bekerja, fasilitas apa sajakah yang bapak/ibu terima dari perusahaan.
- Apa fasilitas kesehatan dan keselamatan kerja yang diberikan oleh perusahaan kepada bapak/ibu.
- Apakah gaji yang bapak/ibu terima sesuai dengan standar pemerintah tentang penggajian, dan bagaimana proses kenaikan gaji tersebut.
- Sebutkan prosedur kenaikan jabatan, penerimaan tunjangan selain gaji, dan pelatihan yang diberikan oleh perusahaan.
- Bagaimana penyelesaian permasalahan jika terjadi konflik kerja antara karyawan dengan fihak manajemen perusahaan.

C. INFORMASI TENTANG BISNIS BERKELANJUTAN

- Menurut pendapat bapak/ibu, hal hal apa sajakah yang menyebabkan perusahaan tempat kerja bapak/ibu bias bertahan selama ini.
- Menurut pendapat bapak/ibu, apa yang dimaksudkan dengan bisnis yang berdasarkan aspek ekonomi berkelanjutan.
- Menurut pendapat bapak/ibu, apa yang dimaksudkan dengan bisnis berdasarkan aspek lingkungan berkelanjutan.
- Menurut pendapat bapak/ibu, apa yang dimaksudkan dengan bisnis berdasarkan aspek social yang berkelanjutan.

- Apakah menurut bapak/ibu, perusahaan tempat bapak/ibu bekerja telah memberikan gaji, kompensasi, tunjangan, fasilitas kerja, fasilitas kesehatan yang cukup layak kepada semua karyawannya?
- Menurut bapak/ibu, manakah urutannya mulai dari yang terpenting dari ketiga bisnis berkelanjutan berikut, ekonomi, lingkungan, dan sosial, sebutkan alasan bapak/ibu memilih peringkat tersebut.

Panduan Wawancara

(Narasumber: Pengurus Lembaga Swadaya Masyarakat)

A. Informasi Umum.

- Bagaimanakah sejarah singkat dan tujuan terbentuknya Lembaga Sosial Kemasyarakatan ini.
- Bagaimanakah rencana jangka pendek, jengka menengah dan jangka panjang lembaga swadaya masyarakat ini dalam pemberdayaan UKM yang anggotanya?
- Bagaimanakah LSM ini menerjemahkan rencana-rencana organisasinya dan apa tolak ukur keberhasilan/ketidakberhasilan dalam pencapaian target-target tersebut.

B. Informasi Mengenai Praktek Pengelolaan Bisnis Berkelanjutan pada Industri Tekstil dan Pakaian.

- Menurut pendapat bapak/ibu sebagai penggiat LSM, apakah yang dimaksudkan dengan praktek pengelolaan bisnis berdasarkan prinsip-prinsip yang berkelanjutan (sustainability)?
- Bagaimanakah peran serta lembaga swadaya masyarakat dalam mensosialisasikan praktek pengelolaan bisnis berkelanjutan/sustainability pada pelaku bisnis konveksi dan tekstil, khususnya pada pemberdayaan Usaha Kecil Menengah.
- Upaya-upaya apa yang dilakukan organisasi yang Bapak/Ibu pimpin ini dalam mensosialisasikan pengelolaan praktek bisnis berdasarkan prinsip-prinsip berkelanjutan tersebut kepada anggota-anggotanya .
- Bagaimanakah peran serta Lembaga Swadaya Masyarakat dalam menjembatani antara kepentingan pemerintah dan kepentingan pelaku usaha dalam hal pengelolaan praktek bisnis berdasarkan prinsip prinsip berkelanjutan/sustainability.
- Menurut pendapat bapak/ibu sebagai penggiat lembaga sosial kemasyarakatan, apakah keuntungan dan kerugian jika UKM menerapkan pengelolaan praktek pengelolaan bisnis berdasarkan prinsip berkelanjutan/sustainability.
- Menurut pendapat bapak/ibu sebagai penggiat LSM, apakah peluang dan tantangan UKM dalam menerapkan pengelolaan bisnis berdasarkan prinsip berkelanjuta/sustainability.

- Menurut pendapat bapak/ibu sebagai penggiat LSM, hal-hal pakah yang perlu dilakukan pelaku usaha kecil menengah dalam meningkatkan penerapkan pengelolaan praktek bisnis berkelanjutan/sustainability.
- Menurut pendapat bapak/ibu sebagai penggiat LSM, apakah yang dimaksudkan dengan praktek pengelolaan bisnis berdasarkan prinsip ekonomi yang berkelanjutan/sustainability?
- Berdasarkan pendapat bapak/ibu sebagai penggiat LSM, apakah yang dimaksudkan dengan praktek pengelolaan bisnis berdasarkan prinsip sosial yang berkelanjutan?
- Menurut pendapat bapak/ibu sebagai penggiat LSM, apakah yang dimaksudkan dengan praktek pengelolaan bisnis secara berkelanjutan sesuai dengan prinsip lingkungan?
- Dari ketiga prinsip tersebut, prinsip manakah menurut anda yang paling penting yang harus diterapkan dalam praktek bisnis perusahaan, khususya Usaha Kecil Menengah.

Panduan wawancara

(Narasumber: Pejabat Pemerintah Pusat/Daerah)

A. Informasi Umum.

- Bagaimana dan apa latar belakang berdirinya Dinas Perindustrian, Perdagangan, Koperasi, dan UMKM, khususnya Bidang Industri dan Produk Tekstil ini terbentuk.
- Bagaimana struktur organisasi, tugas, dan kewenangan dari Bidang yang Bapak/Ibu pimpin tersebut.
- Bagaimana hubungan secara organisatoris dengan pemerintah pusat.

B. Informasi Mengenai Praktek Pengelolaan Bisnis Berkelanjutan pada Industri Tekstil dan Pakaian.

- Bagaimanakah rencana jangka pendek, jengka menengah dan jangka panjang pemerintah daerah berkaitan dengan pemberdayaan perusahaan besar, menengah dan kecil di industri garmen dan tekstil.
- Apakah ada undang atau peraturan pemerintah yang mengatur tentang implementasi sustainability pada industri garmen dan tekstil di Indonesia?
- Apakah alasan, maksud dan tujuan pemerintah dalam menggulirkan kebijakan tersebut?
- Organisasi-organisasi apa sajakah yang merupakan pemangku kebijakan / stakeholders dari industry garmen dan tekstil yang ada di Pekalongan
- Bagaimanakah langkah-langkah yang dilakukan pemerintah daerah dalam mensosialisasikan kebijakan tersebut pada seluruh stakeholders (pemangku kebijakan) pada industri konveksi dan tekstil di Indonesia.
- Upaya-upaya apakah yang dilakukan pemerintah daerah dalam mensoialisasikan kebijakan tentang sustainability tersebut kepada perusahaan besar, kecil dan menengah tekstil dan konveksi.
- Bagaimanakah pemerintah daerah mensinergikan kebijakan berdasarkan prinsip sustainability tersebut sebagai bagian dari program pemberdayaan industri besar, usaha kecil menengah tekstil dan konveksi.

- Bagaimanakah langkah-langkah yang dilakukan pemerintah dalam monitoring praktek bisnis berdasarkan prinsip sustainability pada industri tekstil dan garmen.
- Apa alat ukur yang dipergunakan oleh pemerintah daerah dalam melakukan penilaian bahwa industri besar, menegah, dan kecil tekstil dan garmen tersebut dikategorikan sebagai perusahaan yang telah melakukan praktek bisnis sesuai dengan prinsip-prinsip sustainability.
- Adakah alat ukur yang dipergunakan oleh pemerintah daerah dalam melakukan penilaian bahwa industri besar, menegah, dan kecil tekstil dan garmen tersebut dikategorikan sebagai perusahaan yang telah melakukan praktek bisnis sesuai dengan prinsip-prinsip sustainability dengan klasifikasi berhasil atau tidak berhasil menjalankan praktek bisnisnya berdasarkan prinsip-prinsip sustainability tersebut.
- Adakah dan bagaimana sanksi/penalty yang diberlakukan pemerintah jika berdasarkan hasil monitoring terdapat perusahaan konveksi dan tekstil yang mengabaikan kebijakan tentang praktek bisis berdasarkan prinsip sustainability tersebut
- Apakah keuntungan dan kerugian yang akan didapatkan para pelaku usaha garmen dan tekstil jika perusahaan mereka menerapkan kebijakan sustainability ini pada praktek bisis perusahaan.
- Apakah peluang dan tantangan pemerintah daerah dalam mensosialisasikan kebijakan pemerintah yang berhubungan dengan praktek bisnis berdasarkan prinsip sustainability tersebut.
- Program-program apa sajakah yang dilakukan pemerintah daerah dalam upaya peningkatan penerapan sustainabily dalam praktek bisnis usaha besar, kecil dan menengah garmen dan tekstil tersebut
- Berapa lama waktu yang diperlukan agar kebijakan tentang penerapan prinsip-prinsip praktek bisnis berbasis sustainability ini dinyatakan berhasil.
- Apakah pemerintah juga mengeluarkan sertifikasi sustainability pada perusahaan-perusahaan garmen dan tekstil Indonesia?
- Bagaimanakah prosedur yang dilakukan pemerintah dalam mensertifikasi organisasi/peruahaan konveksi dan tekstil tersebut?
- Bagaimanakah langkah-langkah audit yang dilakukan pemerintah terhadap perusahaan garmen dan tekstil yang telah tersertifikasi sustainability tersebut.
- Bagaimana upaya yang dilakukan pemerintah daerah dalam mendorong pelaku usaha untuk mendapatkan sertifikasi sustainability tersebut.

- Apa peluang dan tantangan pemerintah dalam mensosialisasikan sertifikasi sustainability pada industri tekstil dan garmen.

Appendix D: Summarize of Interview

D1. General Information of participants

Respondent's Occupation	Age	Working Experience		Respondent's Occupation	Age	Working Experience
Owner SME	41-50	>30 years in the field		SMEs worker	31-40	3 years in the field
Owner SME	>51	>30 years in the field		SMEs worker	21-30	4 years in the field
Owner SME	>51	>30 years in the field		SMEs worker	21-30	5 years in the field
Owner SME	31-40	10 years at the field		Chief NGO	31-40	5 years at the field
Owner SME	>51	>30 years at the field		Chief NGO	41-50	5 years at the field
Owner SME	31-40	10 years at the field		Chief NGO	31-40	5 years at the field
Owner SME	31-40	10 years at batik textile		Chief NGO	41-50	3 years at the field

Owner SME	41-50	20 years at the field		Chief NGO	>51	20 years at the field
Owner SME	21-30	5 years at batik textile		home worker	31-40	2 years at top level management
Owner SME	41-50	20 years at the field		deputy chief local official	31-40	3 years at middle level management
Owner SME	31-40	16 years at the field		chief official	>51	10 years at the field
Owner SME	31-40	13 years at the field		Ministry official	41-50	5 years at middle-level management
Owner SME	>51	> 40 years at batik textile		Ministry official	>51	3 years at top level management
Owner SME	>51	> 40 yrs at batik textile		Ministry official	41-50	5 years at top level management
Owner SME	>51	More than 30 years at batik textile		Ministry official	41-50	3 years at middle level management
Owner SME	31-40	10 years at the field		Big firm manager	41-50	10 years at apparel industry

SMEs worker	41-50	20 years at the field		Big firm manager	41-50	21 years at apparel industry
SMEs worker	31-40	20 years at the field		Big firm manager	>51	2 years at textile industry
SMEs worker	21-30	5 years at the field		Big firm manager	41-50	18 years at apparel industry
SMEs worker	31-40	10 years		Big firm deputy manager	31-40	10 years at textile and apparel
SMEs worker	41-50	2 years in the field		MNE worker	21–30	5 years in the field
SMEs worker	>51	30 years in the field		MNE worker	21–30	3 years in the field
SMEs worker	31-40	10 years in the field		MNE worker	21–30	More than ten years
SMEs worker	21-30	3 years in the field		MNE worker	31-40	More than ten years
SMEs worker	21-30	5 years in the field		MNE worker	31-40	More than 10 years
				MNE worker	41-50	More than 10 years

Appendix D2 – Information of MNE Customers

Firm	End product	Customer Geography		Buyer's organization	The period of time to contract approved	Audit process	Problem during contract	The length of working relationship	Process of awarding contract	Buyer's Codes of Conduct
		Local	Export							
A	Fashion and outdoor apparel	-	- U.S - E.U	Exporter agent	Two to three months	Audit by third party auditor	Fabric colour	The longest is one year.	**Export:** 1. Send portfolio to vendor or, 2. Quotation from buyer 3. Send sample to buyer 4. Initial audit by third party	**Export:** 1. Legal document 2. Employees practices 3. Workshop conditions 4. Waste management 5. Customs compliance **Local:**
B	Denim and twill apparel, Jacket	-	-U.S -E.U -Japan -Canada -Australia	Premium brand buyer	Two months	Audit directly by buyer auditor	Shade fabric	- The longest is thirteen years - The latest is three years		
C	Spun Yarn	Java	-E.U -U.S Asia	-Hose firm -Textile and carpet firm	. One month	Audit by mail or by phone	Delivery	The longest: since 1975 The latest is less than one year		
	Stitch-bond non-woven	-	Asia, Europe	food wear firm						
	Embroidery	- Bandung Surabaya	-Italy -U.S -Japan	Apparel company						

		-Jakarta							5. Negotiation, if succeed 6. Received contract **Local:** 1. Quotation from buyer 2. Negotiation, if succeed, 3. received contract	Legal document
D	Factory A : Men's shirt	-	-U.S - E.U	leading brand buyer	Two to three months	Audit either by buyer and third party auditor	Delivery	the longest is 11 years and the latest is two years		
	Site Plant B: fashion	-	-U.S - E.U -Australia Japan	supermarket brand firm and exporter agent						
E	A. Yarn	Java	U.S, Asia	textile firm	Two to six months	Audit by third party auditor, buyer auditor, country-person auditor	finishing	the longest : since 1980		
	B. Textile	within group	Asia, Europe	apparel supplier						
	C. Fashion Apparel	within group	E.U, U.S, Asia, Australia	exporter agent and buyer firm						
	D. Uniform	Ministry of Defence	MoD from 39 nations	buyer organization						

Appendix D3 - Information of MNE Suppliers

Firm	Supplier organization	The parts the firms' supplies to the buyer	Supplier Geography	Supplier selection process	Supplier criteria	The influence of focal company during selection process (if any)	Audit process	Problems during contract	The length of working relationship
A	Producer/ Agent	Textile	China	1. Send quotation to supplier 2. Receive sample 3. negotiation 4. contract awarded	1. Quality 2. Price 3. Delivery	No	Internal audit	Fabric quality	Less than one years
		Zipper, button, label, tag	Java						
	retailer	Carton, box, plastic bag	Java						
B	Producer	Textile, button, zipper, tag	China, India, Pakistan, Java	1. Quotation from nominated supplier 2. Receive sample 3. Sample test 4. Initial audit 5. negotiation, if proceed 6. Contract awarded.	Comply with focal company criteria	The focal company appoints the nominated suppliers.	Focal company auditor and internal auditor audits outsource	Bleaching and fabric quality	- The firm has new suppliers every year - The longest is 13 years
	Distributor	plastic bag, carton	Java						
	Outsource	Washing, bleaching, tailoring	Java						
C	Producer/ trader	natural and synthetic cotton, rayon, viscos,	U.S, China, Thailand, Java	1. Send quotation, or 2. Quotation from supplier 3. Receive sample	1. Quality 2. Price 3. Delivery	No	Internal audit either by phone or by email		- The longest

		polyester, cone		4. Sample test 5. Negotiation, succeed 6. Contract awarded.	4. Lead time 5. Minimum order			Delivery	is 37 years - The firm has new supplier every year
	Distributor	Plastic bags, carton	Java						
	Agent	chemical stuffs	China, Germany, Java						
D	Producer	Textile	China	**Factory A:** Buyer appoints the supplier.	In accordance with focal company criteria	The focal company fully interference	The focal company audit directly to the supplier	Delivery	N/a
		Button, zipper, tag	China, India, Java						
	Distributor	Carton box, plastic bag	Java						three to eight years
	Outsource	Washing, tailoring, labelling	Java						
E	- Producer/ trader - Agent - Distributor	Cotton, Rayon, Viscos, Polyester	China, U.S, India, Java	1. Send quotation 2. Quotation from supplier 2. Receive sample 3. Audit to supplier's factory 3. Negotiation, succeed 4. contract awarded	1. Price 2. Quality 3. Delivery	No	Internal auditor audits the suppliers	The goods did not the same as sample	- The longest is more than 15 years. - The firm has new supplier every year
		Plastic and paper cone	within the group						
		Chemical stuffs	Germany, China, Java						
		Plastic bag, carton	Java						

Appendix D4 - Information about Sustainability practices

Firm	How to retain Sustainability business	How to maintain Economic sustainability	Social sustainability practice and reason in implementing Social sustainability	Environment sustainability	Sustainability ranking	Challenge in retaining sustainability business
A	Good relationship between owner (management) and worker	Consistently produce good Quality products	- Meet basic worker rights Owner philosophy	- Liquid waste is zero - Quilted fabric had collected for free	1. Social 2. Economic 3. Environment	1. Difficult to obtain good workers 2. It takes time to teach apparel operator.
B	- Efficiency - Quality - Fashionable	-Quality -Worker training - Promotion	- Business Social responsibility - Meet worker rights on normative basis - Entrepreneur training	Local waste management certificate	1. environment 2. social 3. economic	- High-cost Bureaucracy - Provocation of NGO - Economic crisis

			- Comply to buyer codes of conduct			- Minimum wage is increased significantly
C	- Quality - Efficiency	- Innovation - Efficiency	- Meet worker rights - Shuttle bus for workers - Regular training - Scholarship - Active in community service Founder philosophy	- International Certificate awardee - The firm is role model in waste management system for industrial manufacture in East Java.	1. Economic 2. Social 3. Environment	Regional minimum wage increases higher than the increase of worker productivity.
D	- Efficiency - Productivity - Management commitment	Efficiency	- Rewards for worker who adopt new working motion - Role model in social compliance in Central Java Owner philosophy	- Quilted fabric - Liquid waste is zero	1. economic 2. social 3. environment	- It takes period to teach good sewing operator. - It is difficult to find sewing operator
E	- Develop new factory - Strengthen of R & D	- Quality - on time delivery	- Worker housing scheme - Farming water treatment - Student internship	International Environment Management awardee	1. Environment 2. social 3. economic	- Local minimum wage have been growing significantly

Appendix D5 – Summary interview with MNE workers

Question/ Respondent	Job	Job description	Worker right	Working facility	Opinion regarding management action in sustainable business	Opinion regarding management action toward economic sustainability	Opinion regarding relationship either among workers or workers-management	Opinion in regard management action toward Environmental responsibility	Sustainability ranking
Worker A	Cutting operator	Cut the fabric using semi-automatic cutting machine.	Minimum wage, One month extra wage/year, a meal, shuttle bus, working shift route, health and pension insurance, paid for two months	workshop condition and health and safety equipment in accordance with international textile and apparel	Onsite visitors from prospective buyers almost everyday	- Production process in 24 hours per day - All of the goods to export	-The firm reply quick respond toward worker's complaint in working facility -Labour Union did not give benefit to worker	- The firm has liquid waste management system -Many external visitor to learn about waste management system	1. Social 2. Economic 3. Environment
Worker B	Sewing operator	Connect piece of fabric using electric sewing machine. Need extraordinary skills, as sewing is the most			- Inspection within production process is strictly. - Only recruit experiencing worker	- The firm supply to the same brands overseas for the last five years - Production process is 24 hours per day	-The firm provide scholarship for worker's children. -The firm give opportunity to promote their worker to higher level fairly -Labour Union committee is chosen due to their closeness with the management	-The firm is apparel producer and all of the apparel raw materials are outsourcing. -Waste management for quilted fabric	1. Social 2. Environment 3. Economic

		important one	maternity leave.	standard, uniform, canteen, on site clinic, shuttle bus					
Worker C	Marking operator	Outline the fabric manually as precise as given design			- The firm recruit expatriate experts in bleaching system	- The firm export all of the goods. - Production process is 24 hours per day	-labour union less action in advocating worker's right. -Unstandardized procedure to promote worker to the high level	- The firm has waste management system -Piloting in liquid waste management system for denims goods	1. Social 2. Economy 3. Environment
Worker D	Spinning operator	Operating automatic spinning machine			-	-The goods are majority for export and the firm supply as supplier for hose manufacture. -Production process is 24 hours per day	-Benefits to worker is the highest in compare with other textile and apparel company within the industrial area -The management give high trust to labour union and the labour union committee did not have concrete plan toward labour's empowerment	-The firm hold ISO 14001. - The firm has wide space to plan trees within the workshop. - Waste management SOP is too complicated and time consuming. -Too many external visitors during work day bothering the job	1. Social 2. Economic 3. Environment

Worker E	Material handling operator	Handling the goods using forklift from transit room to storage room			The firm has many outsourcing both sub-con firms and onsite workers	- Production process is 24 hours per day. - Export oriented for the goods	-Too many conflict between workers and labour union	-Labour union did not represent worker's voice. -Equal opportunity to promote on the high level	1. Social 2. Economic 3. Environment
Worker F	Packing operator	Counting and packing the goods into carton box manually			- The firm has reputable research and development department - The management launch new textile design with specific purpose for field equipment every month.	-The firm export their product almost 90 per cent but Worker's wage and benefit only comply in accordance to local standard. -24 hours production process	-The firm provide housing scheme to worker who working on the firm for at least ten years, but waiting list is too long. -Unfair worker promotion as the promotion only based on recommendation from worker's supervisor	-Integrated waste treatment system. -The management is less responsive to respond community complain due pollution. -Local authority less active in advocating the community as they received benefit from firm	1. Social 2. Economic 3. Environment

Appendix D6 – Summary interview with SME workers

Question/ Respondent institutional	Occupation	Job responsibility	Worker right	Working facility	How the owner maintain Sustainable business	How the firm produce the goods which Economically profitable	Opinion in social relationship	Environment management	Sustainability ranking
	QC supervisor	Supervising production process	Wage, benefits (bonus, health)	Good production line and space, motor cycle, dormitory, safety equipment	Good relation with customers, good marketer	Good in on time delivery and quality even the price is higher than the competitors business.	three times meeting between worker and owner to discuss any working issue, but the meeting does not discuss about bonus and wage	Communal liquid waste management, Some liquid waste flow directly to the river	4. Social 5. Environment 6. economic
Worker B	Dyeing operator	Mixing and blending colour apply to	Wage, bonus	No safety equipment, unsafe production line, good	Good relationship with the buyer from big companies	Low product price due to low wage	The owner demands high target to the workers with minimum working	No waste management	4. social 5. No opinion 6. No opinion

		textile manually		working space	as all the goods supply to big apparel firm		facilities and low compensation.		
Worker C	Batik textile hand painter	Draw a piece of fabric. Need high precision in order to produce a good as given design	wage, benefits (health, rice, bonus),	Dormitory , wide working space, safety equipment	Firm have been produce silk batik over decades in good quality.	The goods are silk batik painting textile and apparel so the price is expensive and even over demand	Good in benefits and working facilities	No opinion	4. Social 5. Economy 6. environment
Worker D	Batik textile hand painter	Draw a piece of textile that has given design. Pay attention in detail as a piece batik painting will be finished at least one month.	Wage, Benefits (rice, bonus, health)	Good production line and health and safety equipment	The owner is fourth generation of family business so the firm has very good marketing networks	As the demands of goods is increasing, the firm has many home workers	Wage is above legal local wage.	Quilted batik take for free	4. social 5. environment 6. economic

Worker E	HRD supervisor	Checking	Wage, benefits (weekly bonus based, health, semi-annual bonus)	Motor cycle, dormitory, daily allowance	Online business	Contract with new corporate customers	Monthly meeting between workers and the owner	Communal liquid waste management	4. economic 5. social 6. environment
Worker F	Purchasing and marketing supervisor	Sent sample to prospective customer, dealing with supplier	Wage, benefits (bonus, health)	motor cycle, lunch, cell phone	The owner has good networking with official authority.	Demands are increasing gradually	Weekly meeting between worker and management	Joint liquid waste management	4. social 5. economic 6. environment
Worker G	QC, stock of goods supervisor	Supervising production process and responsible in the number of goods in and out from warehouse	Wage, benefits (scholarship, annual bonus and bonus based on the goods sold)	Lunch, motor cycle	The firm known as reputable family business and networking	Produce exclusive batik textile apparel for high- end customer which economically beneficial than value batik	The owner support the workers to develop their skills, especially training in design, painting, and using modern sewing machine	No opinion	1. Social 2. Environment 3. social

Worker H	Sales	Sell product to reseller at the showroom	wage, benefit s (annual bonus and optional bonus based on product sold,	Motor cycle, Lunch allowance,	The owner has additional job to support sustainabilit y business of the firm	Demand in the goods are increasing significantly it caused significant profit	Good relationship with other employees. The owner does not demand sales target	Do not have any idea whether the firm have waste manage ment or not	1. Economi c 2. Social 3. environm ent
Worker I	Sewing operator	Sewing and trimming batik textile	Wage, benefits (snacks allowanc e, bonus)	Modern sewing machine, good air circulation and lightening	Continuity demands.	The majority customers come from big corporation that buy exclusive batik apparel in large amount of number.	Annual meeting between worker and owner to resolve working problem, less pressure and supervision from the owner	Quilted fabric was sold	1. Social 2. Economi c 3. environm ent
Worker J	Hand stampin g operator	Stamping piece of fabric using cooper stamp	Wage, bonus	Wide working space, good air circulation	No opinion	The goods are very good quality in dyeing in compare with others	Good relationship among workers.	No opinion.	1. social 2. environ ment 3. economi c

Worker K	Hand stamping operator		Wage, benefits (bonus, health)		The owner is veteran in the field, Continuity demands from overseas.	The goods are high quality batik stamping textile over decades. Selling the goods overseas	The owner always accommodates what the worker wants in term of working facility and compensation.	Liquid waste is flowing to the river. No opinion	1. social 2. economic 3. environment
Worker L	Hand stamping operator		Fair wage, benefits (bonus, health, insurance, scholarship)	Daily snacks, tailored-made in ergonomist working facility	launched many product variety as the owner has unlimited capital resource	The firm refer as trend setter among this cluster include dyeing technology and motif	Good relationship. The salary is the highest among other SMEs	The firm has individual waste management.	1. social 2. economic 3. environment

Appendix D7 – Summary interview with National Government Agencies

	The National Development Planning Agency	**Ministry of Trade**	**Ministry of Cooperative and MSMEs**	**Indonesian National Standard Bureau**
Agency roles and authority	Planning coordinator within nineteen ministries that involve in empowerment of MSMEs	Formulating and executing policies, programs, technical assistance and evaluation of textile industry.	Formulating, coordination, implementation and monitoring empowerment of Cooperative & MSMEs	Develop and formulating system of standardisation
Issues in such sectors/ Industry	- How to remove barriers and regulatory constraint to access global market - Performance of the Government with regard to all SMEs expectations is negative - Lack acknowledgement in business formalization	- Regional minimum wage increased by forty per cent caused incriminating apparel business. - High-cost energy and frequently supply shortages - Deprived port infrastructure - old-fashion textile machinery	- Solely ownership and privately managed - Views towards the empowerment of SMEs is part of charity and mercy programs - Gap between SMEs which is located in city and remote areas	- Indonesian National Standard for batik and apparel SMEs is voluntarily instead of mandatory - Less awareness of batik SMEs in national standard
Policy	- Improvement of conductive business climate - Improvement access to productive resources and human resources	- Collaboration with textile importing countries - Providing incentives - Increasing surveillance of export - Improve the quality of national goods	- Conducive Business Climate Improvement - Improved Access resources and competitiveness human resources - Product development and Marketing	- Improving standardization assessment system - improvement of laboratory and inspection accreditation bodies - Education in standardisation awareness
Strategy and planning program	- Streamlining rules and regulations	- Improve infrastructure - Empowerment of Human resource - Technology renewal	- Establish One village one product program	- Formulating at least twenty-one Indonesian National Standard

	- Provision of Financing schemes matched with the needs of SMEs - Strengthening SMEs cluster	- Develop industrial cluster.	- Develop SMEs business cluster/ business centre	related to textiles and apparel. - Formulating Eco labelling standard
Audit program	- Quarterly monitoring for short term planning program - Annual review for middle term planning program			
Opportunity	- SMEs have significant sources of investment capital with funds from third parties. - The SMEs sector is very dynamic and robust	- Positive trend in upstream industry - High demands of premium apparel - Domestic and local investment growth	- Commitment and support from the community, local government, and legislative - Grow in domestic market and the availability of unlimited labour.	Raise awareness of Indonesian National Standard from small, medium, and big textile and apparel firms.
Challenges	- Ineffective coordination inter-ministerial working groups - SMEs clusters were considered as less successful - Conflict of interest in adopting whether environment or economic sustainability	- Reduction in incentive scheme due to limited funding - Trick from export brokerage - A number of apparel big firms criticized the increasing of minimum wage and they reported to closed down their companies.	- Hidden information from the owner - Inability to compete against retail business belong to big producers - Financial credit schemes mostly working capital loans instead of investment loans with a high rates - Lack of coordination between related agencies	- Unsettled in term of forming the standardisation of batik production process - Complement between national and International Standard.

Appendix D8 – Summary interview with NGOs

Respondent/ Question	Respondent A	Respondent B	Respondent C	Respondent D	Respondent E
Organization history and purpose	- Established in 2004, lawful organization - First SMEs batik professional organization - Concern gap among batik producers within the area	- Established in 2004, authorized organization - Formal organizations to communicate with textile and apparel industry stakeholders - Membership: workers, owners, communities, district official	- Established in 2007, legitimate organization - Needs to form professional organization - Members: the stakeholders within village	- Established in 2009, lawful organization. - Memberships: voluntarily, official district, batik owners and workers, community within the village - To respond the community awareness about the importance of formal organization	- Established in 2001, lawful organization - Mandatory memberships for big firm association, labour organization, and regional authority
Issues in such field	- Developing in stamping technology of resist-dyeing wax is not widely accepted	- Extinct regeneration of batik artisan - Gap between micro to small and medium firm	- Textile printing production process are more profitable than batik production process - Perception that batik producers tend to do	- Batik apparel is outdated and lowly sewing quality - Lack of regeneration due to perception that the successful batik businessmen were caused	- Conflict of interest - workers rally tend to increase - No obligation for SMEs to pay their worker as the same as legal minimum wage

	- Enormous import fabric with batik motive	- Debatable among batik firms in implementing batik labelling	unfair worker-right practice and unreliable to treat waste	by family business reputation - Minus support from local agency	- Worker outsourcing
Programs and partnerships with stakeholders	- Initiating the forming of batik SMEs cluster in other regions. - Free training provider from organization	- Each program refer to economical beneficiary - Program in general focus on the empowerment of batik micro and small firms	- Bottom up to top down program - CSR program from big companies, NGOs local and overseas	- Initiating batik centre as a place for field works, batik shopping centre and cultural preservation - Training of batik painting, stamping, dyeing and sewing	- Formulating regional minimum wage every year - Legal mediator in resolving conflict between authority, worker, and firm owner
The role of organization to facilitate members and stakeholders interest	- Proactive approaches to the SMEs owner to participate on textile and apparel exhibition either local or overseas	- Proactive in socializing programs - Proposing big companies and financial institution to conduct CSR within the cluster	- Facilitator between members and the stakeholders - Independent organization	- Proactive in approaching local government - Initiating entrepreneurship program	- Mediator to resolve disagreement amicably - Mediation to resolve conflict of interests among workers, owners, and authority
Opportunities	- Acknowledgment from stakeholders - Support from authority in deal with organization's interest is better	- Trust from the stakeholders to the organization - This batik cluster has been considered as	- Participate in competition to gather external funding - Opportunity to launching program	- Medium batik firms actively support small and micro firms - Majority the members actively involved in any programs	- Trusted organization in determine minimum wage - Recommendation from the organization as reference for

	than to individual interests.	target for research, shopping, and tourism.	through third party donor		authorities, workers, and firms
Challenges in sustain the organizations	- The active members only 20 per cent out of 100 per cent - Perception that the committee gain benefit much more than regular members - Difficult to engage amid SMEs firms	- Program action is outlying from planning - Authority only focuses on facilitating medium companies. - Membership fee is not appropriate	- Difficulty to invite the SMEs owner to attend on regular meeting - Opinion among members that there were no beneficial to involve in the organization	- How to persuade the community that joining the organization will be valuable - Workers have a tendency to restrained to give details regarding the working- issues on the forum meeting	- Veto from regional head in assigning minimum wage - Disagreement between workers and employees to prevailed themselves - Labour union tend to accommodate personal needs instead of members need

Appendix D9 – Summary interview with NGOs regarding sustainability perspectives

Respondent/ Question	**Respondent A**	**Respondent B**	**Respondent C**	**Respondent D**	**Respondent E**
Views in sustainability	Create batik labelling as differentiator between one and the other batik producers	Maintain the cluster business environment	Partnership between small firm and big firms	Ability to retain product quality	Innovations and good partnership among all management level
Opinion toward members regarding economic sustainability practices	(+): - The batik firms within the cluster have their own characteristics product (-): - Price war among batik businessperson	(+): - Appreciation to workers have an impact on financial benefits (-): - Price war between batik producers and batik business-person	(+): - Consciousness to enter nice-market (-):- There is no separation between financial for personal and corporate interest	(+): - Outsource to other batik firms (-):- Batik owners refer to paradigm ‘ less input for unlimited output'	No opinion
Views toward members regarding social sustainability practices	(+): - Workers allow to organise their job either in the workshop or at home (-): - Experienced batik-artisan tend to transfer from one to the other batik companies	(+): - Partnership not only between worker-owner, but also link among batik owners (-): - Inaccurate information about wage among workers	(+): -Workers be able to resign and find new job straightforwardly - Wage based on working output more valuable than daily-basis (-): - Amicably solution tend to delicacy unfairly	(+):- Positive trend in improving employees’ welfare (-):- Unfair payment for homeworkers	(+): Big companies accommodate at least basic workers’ rights (-) As SMEs no need to comply with legal wage, unfair payment taking place the workers

Opinion toward members regarding environmental sustainability practices	(+): - Batik owners awareness in term of 'batik green product' - Won International award in waste management system (-): - Using outlaw chemical dyeing due to the chemical dye is retailed without restrictions	(+): - Established communal waste management among organization members - Grant from NGO to build individual waste management system (-): - Barrier to adopt simple waste management system as a number of batik owners within the cluster are not members of organization	(+): - Constructed Communal waste management - Immense grant in dyeing fabric using natural dye (-): - Allegation that river contamination is caused by waste of batik production process	(+): - Aid from local NGO - Increasing members awareness about the importance of waste management system (-): - Liquid waste management system aid from local agency is infiltration wells instead of refining waste - Existing collective waste management system has limited capacity	(+): -Big company voluntarily instituting waste management system - Big firm conscious that fulfilling waste management system is profitable (-): - Inexpensive compensation that paid by big companies in case they fined unfair waste management practice
Views toward Sustainability ranking	1. Economic 2. Social 3. Environment	1. Economic 2. Social 3. Environmental	1. Economic 2. Social 3. Environment	1. Environment 2. Economic 3. Social	No opinion

Appendix D10 – Information regarding customers of SME Owners and Home worker

Firm	The goods	Customer Geography		Buyer's organization	The period of time to contract approved	Audit process	Problem during contract	The length of working relationship	Process of awarding contract	Buyer's Codes of Conduct
		Local	Export							
A	-Batik bedding, cushion and Table cloth textile, batik apparel	Java, Sumatera	-	Retailers 80%(big and medium firms), end-customer 20%,	1-4 weeks	By phone	re-deliver the goods due to inconsistent in quality	The longest: more than 20 years The latest: less than a year	**Local apparel exporter and big companies:** 1. The firm send sample to the buyer, or the buyer send requirement 2. The firm send sample to the buyers 3. If it is pass, then sign a contract	Local export agent: -The given-stages of production process were necessity to follow by the firm. State institution: -Legal business licenses were needed as mandatory requirement.
B	batik textile and apparel	East and Central Java, Sumatera	-	state institutions 40%, end-user 20%, big and medium firms 40%	1. state institution:2-4 months 2. Big firms: 1-2 months	By phone or in house audit	There were no complain from the buyers	- The longest; more than 30 years - The latest: less than a year		

C	Batik textile and apparel	Java, Sumatera, Kalimantan	Malaysia and Singapore (direct export), Dutch (By exporter agent)	State organizations, Local premium brands and big firms, retailer, end-customer, exporter agents	- Export: 2-4 months. - big firms: 1-3 months -state org:2-3 months	- state org: visit the firm exporter agent: by electronic mail -big firms; visit the firms	-local buyers: inappropriate size	The longest: the longest: more than 30 years - The latest: less than 6 months	**Private and Public Institution:** 1. Bid announcement on national newspapers 2. the firm send an offer to the buyer 3. Once the firm passed on first screening, the buyer invite the firm to send sample 4. If it is passed, sign a contract	
D	Batik textile	-Local export agent (Java)		Apparel exporters and big firms	1-2 months	the buyer's surveyor monitored daily	Reworking the goods due to dyeing	1-3 years		
E	Batik textile and apparel	Java, Sumatera		Retailer, big firms, state organizations	1-3 months	the buyer's surveyor monitored weekly	delivery time	the longest: more than 20 years The latest: less than a year		
F	Batik textile and apparel	Java, Sumatera, West Nusa Tenggara	Exporter agents (local)	Big firms, retailer, end-customer, exporter agent	1-3 months	big firm audit once during the contract	redeliver due to scrap products	The longest:> 10 years The latest:< 6 months		

G	Batik apparel	Bali, Lombok, Yogyakarta	Malaysia and Brunei (by exporter agent)	Reseller, exporter agent	1-2 months	by phone	redeliver due to dyeing quality and size	More than 10 years		
H	Batik textile	-	U.S.A, Canada, Australia, UK	distributor and exporter agent	2-3 months	by electronic mail	textile scrap due to dyeing process	more than 3 years		
I	Batik textile, apparel, and bedding textile	Java, Bali, Sumatera	Japan, Malaysia, Singapore (by Agent)	Retailers, local big firms, exporter agent	Local:1-2 months Export: 2-3 months	Buyer's surveyor audit the firm every month	Export: delivery time of batik painting -dyeing due to natural dye	Longest: more than 30 years Latest: less than a year		
J	Batik textile and apparel	Java, Sumatera, Kalimantan, Bali	Malaysia and Singapore (By agent)	Retailers, end-customer, exporter agent, big firms	2-3 months	buyer's surveyor audit the firm monthly	tailoring and dyeing	Longest: more than 20 years Latest: less than 6 months		
K	Batik textile, apparel, Table cloth and	Java, Sumatera, Bali	France and Japan	Local big firms, exporter from prominent brands	Local: 1-2 months Export: 2-4 months	Export: the auditor monitored every two months.	dyeing and textile quality	Longest: more than 30 years Latest: less than 3 years		

	bedding textile					Local: once during the contract				
L	Batik textile, apparel, handicraft	Java, Sumatera, Kalimantan, Bali	Japan, Malaysia	Retailer, end-customer, local big firms, exporter from prominent principals	Local- 1-2 months Export: 2-4 months	Local: buyer's surveyor audited weekly to monthly Export: The buyer audit once	Tailoring and dyeing quality	The longest: more than 30 years The latest: less than 6 months		
M	Batik textile and apparel	Sumatera, Java, Bali	Singapore, Malaysia	Retailer, Local big firms, exporter agents	Local: 1-5 weeks Export; 1-3 months	Local: weekly monitored Export: monthly monitored	Export: dyeing quality	The longest: more than 30 years The latest: 1-2 years		
N	Batik textile and apparel	Java, Papua, Kalimantan, Sumatera, Bali	Japan, U.S.A	Retailer, end-customer, export by agent, big firms, state organization	Local: 1-2 months Export: 2-4 months	Local: weekly monitored Export: once during the contract	Export: Dyeing quality	The longest; more than 20 years The latest: less than 6 months		
O	Batik textile and apparel	Java, Bali, Sumatera, Kalimantan, Sulawe	Philippine, Malaysia, Gulf Countries, Italy	Retailer, end-customer, exporter agent, exporter	Local: 1-3 months Export: 2-4 months	Local: daily to monthly monitored Export: once during the contract	Export: Dyeing quality due to natural dyeing stuffs	The longest: more than 15 years The latest: less than 6 months		

		si, Papua								
P	Batik textile and apparel	Java, Sumatera, Bali, Kalimantan	Japan	local big firms, retailer, end-customer, exporter agent	Local- 1-8 weeks Export; 2-4 months	Local: monthly monitored Export: once during the contract	Export:: dyeing quality	The longest : more than 10 years The latest; less than a year		
aa	Batik apparel	Central Java	-	local prominent brands	Local prominent brands and big firms	1-2 weeks	by phone	Trimming process	1. The buyers send apparel design. 2. Negotiate delivery time. 3. Sign the contract	The buyers have standardized that must obliged in tailoring process

Appendix D11 – Information regarding suppliers of SME Owners and Home worker

Firm	Supplier organization	The parts the firms' supplies to the firm	Supplier's Geography	Supplier selection process	Supplier criteria	The influence of focal company during selection process (if any)	Audit process	Problems during contract	The length of working relationship with the supplier
A to P	Producer firm	rayon, silk	Java	1. The supplier send offer and sample to the firm 2. The sample was tested by the firm 3. Once it was pass, negotiation in term of price and delivery time 4. Sign contract.	The goods for export purpose: 1. Quality 2. Delivery 3. term of payment The goods to deliver to big firm: 1. Quality 2.Term of payment 3. Delivery The goods to deliver to medium firm: 1. Price 2. Quality 3. Delivery	In general, the firm as focal company more dominant than the suppliers	1. The firm monitored the supplier by phone 2. The supplier visit the firm during the contract	1. Textile's density and scrap 2. Chemical and natural dyes 3. Delivery time 3. Un-availability product	The longest: more than 30 years The latest: less than one month
	Agent/ distributor	cotton, silk, chemical stuffs, button, yarn, plastic and carton box	local shop						
	Farmer	natural dyeing, rosin	Java						

aa	Agent	button, yarn, marking pencil for textile	local shop	The firm has two suppliers that supplied the materials periodically.					More than 4 years

Appendix D12 – Information regarding sustainability perspectives of SME Owners and Home worker

Firm	How to retain Sustainability business	How to maintain Economic sustainability	Social sustainability practice and reason in implementing Social sustainability	Environment sustainability	Opinion regarding Sustainability ranking	Challenge in retaining sustainability business
	Innovation by launching new trend in bedding textile regularly	The owner maintain good relationship with the old customers	- Equal opportunity to promote the workers -Monthly meeting with the employees	Joining on communal water waste treatment within the business cluster	1. Economy 2. Social 3. Environment	- Illegal goods from overseas with low price - Black campaign in term of environmental waste management
	Maintain good quality and relationship between the owner-customers	Focus to sell the goods for state organization	- Provide benefit for the workers - Treat the workers equally	Joint on communal waste management	The owners stated that triple bottom line sustainability could not rank/equal	- copying the goods from overseas illegally. - Consistency in maintain the quality -Hardly to hire good stamping artisans
	Continuous improvement in design and production process	Maintain good relationship with the buyers Maintain networking	- Coaching clinic in new technique of batik painting	Joint on communal waste management -Pioneer in communal waste management	1. Social 2. Environment 3. Economy	- Unfair competition among other batik producers - Less support from the government to

	- Good practice in regeneration process	with potential buyers				promote the goods overseas
	Proactive to contact with potential buyers	The owner has two main buyer firms	Treat the workers as colleagues -Provide small benefit for the workers	No waste management	1. Social 2. Economy 3. Environment	- Less supply in skilled-stamping artisans
	Maintain the firm's reputation in high quality apparel maker.	The owner set up written standardization in apparel production process	- Free training in tailoring the goods. - Monitoring the artisan by visiting the artisan's workshop	-No chemical waste - Quilted fabric was sold to third party	1. economy 2. social 3. environment	(+) Well recognized from the buyers (-) Difficult to find capable tailor artisan

Appendix E – Matrix of Social Network Analyses

Appendix E1 – Matrix Medium-sized Enterprises

	BATIK TEXTILE	S_FABRIC1	S_FABRIC2	S_FABRIC3	S_FABRIC4	S_FABRIC5	S_FABRICXXX	S_ROSIN	S_DYEAGENT1	S_DYEAGENT2	S_DYEAGENT3	HWORKER_STAMPING1	HWORKER_STAMPING2	HWORKER_STAMPING3	HWORKER_STAMPING4	HWORKER_STAMPING5	HWORKER_STAMPINGXXX	OUTSOURCE_BTEXTILE1	OUTSOURCE_BTEXTILE2	OUTSOURCE_BTEXTILE3	OUTSOURCE_BTEXTILE4	OUTSOURCE_BTEXTILE5	OUTSOURCE_BTEXTILE6
BATIK TEXTILE		0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0
S_FABRIC1	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_FABRIC2	1	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_FABRIC3	1	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_FABRIC4	1	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_FABRIC5	1	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_FABRICXXX	1	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_ROSIN	1	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_DYEAGENT1	1	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_DYEAGENT2	1	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
S_DYEAGENT3	1	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0
HWORKER_STAMPING1	1	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
HWORKER_STAMPING2	1	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
HWORKER_STAMPING3	1	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
HWORKER_STAMPING4	1	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0
HWORKER_STAMPING5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0
HWORKER_STAMPINGXXX	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
OUTSOURCE_BTEXTILE1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
OUTSOURCE_BTEXTILE2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0
OUTSOURCE_BTEXTILE3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
OUTSOURCE_BTEXTILE4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
OUTSOURCE_BTEXTILE5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
OUTSOURCE_BTEXTILE6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Appendix E2 – Matrix small-sized batik textile firm

	B_TEXTILE	S_ROSIN	S_DYE_CEM1	S_DYE_CEM2	H WORKER_BATIK TEXTILE MAKER1	H WORKER_BATIK TEXTILE MAKER2	H WORKER_BATIK TEXTILE MAKER3	H WORKER_BATIK TEXTILE MAKER4	s_rosin2	s_dye_cem2
B_TEXTILE		0	0	0	1	1	1	1		
S_ROSIN	1		0	0	0	0	0	0		
S_DYE_CEM1	1	0		0	0	0	0	0		
S_DYE_CEM2	1	0	0			0	0	0		
H WORKER_BATIK TEXTILE MAKER1	1	0	0	0	0		0	0	0	0
H WORKER_BATIK TEXTILE MAKER2	1	0	0	0	0	0		0	0	0
H WORKER_BATIK TEXTILE MAKER3	1	0	0	0	0	0	0		0	0
H WORKER_BATIK TEXTILE MAKER4	1	0	0	0	0	0	0	0	0	0
s_rosin2					1	1	1	1		0
s_dye_cem2					1	1	1	1	0	

Appendix E3 – Matrix Small-sized Firm Supplying to textile exporters

	GARMENT	S_Z_Y_B	S_LABEL	S_PACK.	BATIK TI	OUTSOU	OUTSOU	S_FABRI	S_FABRI	S_FABRI	S_ROSIN	S_DYE_CHEMICA	
GARMENT		0	0	0	0	0	0	0	0	0	0	0	
S_Z_Y_B	1		0	0	0	0	0	0	0	0	0	0	
S_LABEL	1	0		0	0	0	0	0	0	0	0	0	
S_PACKAGING	1	0	0		0	0	0	0	0	0	0	0	
BATIK TEXTILE	1	0	0	0		1	1	0	0	0	0	0	
OUTSOURCE_BATIK DYE1		0	0	0	1		0	0	0	0	0	0	
OUTSOURCE_BATIK DYE2		0	0	0	1	0		0	0	0	0	0	
S_FABRIC1	0	0	0	0	0	1	1		0	0	0	0	
S_FABRIC2	0	0	0	0	0	1	1	0		0	0	0	
S_FABRIC3	0	0	0	0	0	1	1	0	0		0	0	
S_ROSIN	0	0	0	0	0	1	1	0	0	0		0	
S_DYE_CHEMICAL	0	0	0	0	0	1	1	0	0	0	0		

Appendix E4 – Matrix Apparel home worker

	BATIK GARME	S_TRIM1	S_TRIM2	OUTSOU	OUTSOU	OUTSOU	OUTSOU	OUTSOURCE_SEWING5		
BATIK GARMENT		0	0	0	0	0	0	0		
S_TRIM1	**1**		0	0	0	0	0	0		
S_TRIM2	**1**	0		0	0	0	0	0		
OUTSOURCE_SEWING1	**1**	0	0		0	0	0	0		
OUTSOURCE_SEWING2	**1**	0	0	0		0	0	0		
OUTSOURCE_SEWING3	**1**	0	0	0	0		0	0		
OUTSOURCE_SEWING4	**1**	0	0	0	0	0		0		
OUTSOURCE_SEWING5	**1**	0	0	0	0	0	0			

Appendix E5 – Matrix Medium-sized exporter firm

	BATIK TEXTILE	S_FABRIC1	S_FABRIC2	S_FABRIC3	S_FABRIC4	S_FABRIC5	S_FABRICXXX	S_ROSIN	S_DYEALCEM1	S_DYEALCEM2	S_DYEALCEM3	HWORKER_STAMPING1	HWORKER_STAMPING2	HWORKER_STAMPING3	HWORKER_STAMPING4	HWORKER_STAMPING5	HWORKER_STAMPINGXXX	OUTSOURCE_BTEXTILE1	OUTSOURCE_BTEXTILE2	OUTSOURCE_BTEXTILE3	OUTSOURCE_BTEXTILE4	OUTSOURCE_BTEXTILE5	OUTSOURCE_BTEXTILE6
BATIK TEXTILE		0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
S_FABRIC1	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_FABRIC2	1	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_FABRIC3	1	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_FABRIC4	1	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_FABRIC5	1	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_FABRICXXX	1	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_ROSIN	1	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_DYEALCEM1	1	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_DYEALCEM2	1	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_DYEALCEM3	1	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
HWORKER_STAMPING1	1	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0
HWORKER_STAMPING2	1	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
HWORKER_STAMPING3	1	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
HWORKER_STAMPING4	1	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
HWORKER_STAMPING5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0
HWORKER_STAMPINGXXX	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0
OUTSOURCE_BTEXTILE1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
OUTSOURCE_BTEXTILE2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
OUTSOURCE_BTEXTILE3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0
OUTSOURCE_BTEXTILE4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
OUTSOURCE_BTEXTILE5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
OUTSOURCE_BTEXTILE6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Appendix E6 – Matrix Batik textile and apparel SME Industry Cluster A

	Batik SE	Batik CP	Batik LB	Batik PL	Batik MM	B TT	Batik AA	Batik MA	Batik MU	Batik GT	Batik AM	Batik GD	Batik CE	Batik PK	Batik LA	Batik SL	Batik SP	Batik PS	Batik AC	Batik OS	Batik NN	Batik MH	Batik DO	Batik PU	Batik CA	Batik SA	Batik MU	Batik MA	Batik SU	Batik PH	Batik LA	Batik RO	Batik SL	Batik PA	NGO1	NGO2	NGO3	LOCAL_GOV	LOCAL_GOV	MNE	T_suplier_to export
Batik SE		0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik CP	0		0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik LB	0	0		1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik PL	0	0	0		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0
Batik MM	0	0	0	1		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B TT	0	0	0	1	0		0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik AA	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik MA	0	0	0	1	0	0		0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik MU	0	0	0	1	0	0	0		0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik GT	0	0	0	1	0	0	0	0		0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik AM	0	0	0	1	0	0	0	0	0		0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik GD	0	0	0	1	0	0	0	0	0	0		0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik CE	0	0	0	1	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik PK	0	0	0	1	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0
Batik LA	0	0	0	1	0	0	0	0	0	0	0	0	0	1		0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik SL	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0		0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik SP	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik PS	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik AC	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik OS	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik NN	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik MH	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Batik DO	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik PU	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik CA	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik SA	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik MU	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batik MA	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
Batik SU	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0
Batik PH	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
Batik LA	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
Batik RO	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
Batik SL	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0
Batik PA	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0
NGO1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
NGO2	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
NGO3	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0
LOCAL_GOV1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
LOCAL_GOV1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
MNE	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
T_suplier_to export	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Appendix E7 – Matrix Batik textile and apparel SME Industry Cluster B

	BATIK.NU	MR.RR	BATIK.KA	MR.AM	BATIK.ZE	BATIK.GM	BATIK.YA	MR. MB	BATIK.BE	MR. MB	BATIK.DI	BATIK.AN	MR. IS	MR. NL	MRS. DZ	BATIK.DI	BATIK.SI	BATIK.MR	BATIK.YA	BATIK.AX	BATIK.RI	BATIK.BE	BATIK.FA	BATIK.AA	BATIK.FB	BATIK.KZ	BATIK.MF	BATIK.DM	BATIK.AK	BATIK.BA	BATIK.ZA	BATIK.HU	BATIK.AN	BATIK.HI	BATIK.IS	BATIK.JU	BATIK.MF	BATIK.EL	BATIK.MEG	BATIK.SA	BATIK.EM	BATIK.SY	BATIK.PA	BATIK.SR	BATIK.TOOL	BATIK_H	MR.RS	LOCAL_GOV	GOV
BATIK.NU		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
MR.RR	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BATIK.KA	1	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
MR.AM	1	1	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.ZE	1	1	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.GM	1	1	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.YA	1	1	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
MR. MB	1	1	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.BE	1	1	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
MR. MB	1	1	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.DI	1	1	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.AN	1	1	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
MR. IS	1	1	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
MR. NL	1	1	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
MRS. DZ	1	1	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.DI	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.SI	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.MR	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.YA	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.AX	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.RI	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.BE	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.FA	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.AA	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.FB	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.KZ	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.MF	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.DM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.AK	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.BA	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.ZA	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.HU	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.AN	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.HI	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.IS	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	1	0
BATIK.JU	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0
BATIK.MF	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	1	0
BATIK.EL	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	1	0
BATIK.MEG	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	1	0
BATIK.SA	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	1	0
BATIK.EM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	1	0
BATIK.SY	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	1	0
BATIK.PA	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	1	0
BATIK.SR	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	1	0
BATIK.TOOLS_SELLER	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	1	0
BATIK_H	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		1	0
MR.RS	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		1	0
LOCAL_GOV	1	1	1		1	1	1	0	1		1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0		1
GOV	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	