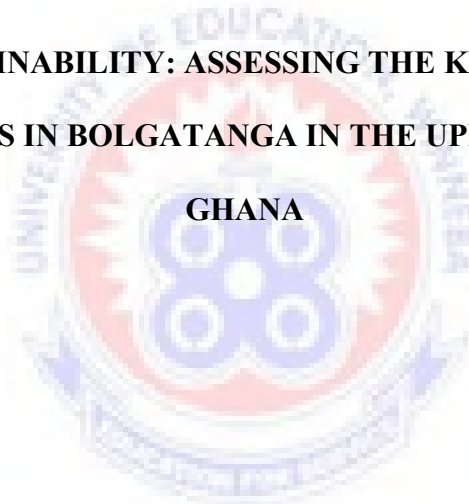


UNIVERSITY OF EDUCATION, WINNEBA
COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

**FASHION AND SUSTAINABILITY: ASSESSING THE KNOWLEDGE LEVEL OF
FASHION DESIGNERS IN BOLGATANGA IN THE UPPER EAST REGION OF
GHANA**



ATINGA LINDA

AUGUST 2020

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190010418

**A Thesis Submitted to Department of FASHION DESIGN AND TEXTILES, Faculty of
VOCATIONAL EDUCATION, School of Research and Graduate Studies, University of
Education, Winneba, in Partial Fulfilment of the requirements for the awarded of
MASTER OF TECHNOLOGY IN FASHION DESIGN AND TEXTILES**

AUGUST 2020

DECLARATION

I, ATINGA LINDA, hereby declare that this thesis, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole for another degree elsewhere.

SIGNATURE

DATE:.....

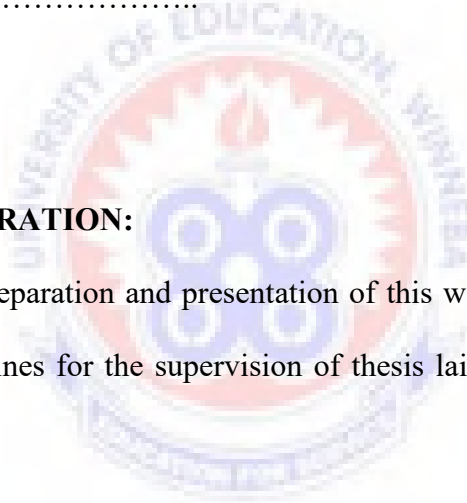
SUPERVISOR'S DECLARATION:

I hereby declare that the preparation and presentation of this work was supervised by me in accordance with the guidelines for the supervision of thesis laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: Ninette Afi Appiah (PhD)

SIGNATURE

DATE:.....



DEDICATION

This project is dedicated to my lovely husband Mr. Abubakari Apuko Mohammed, my children (Kismat, Haqq, Kadiri, Musah and my dearest mother (Mama Memunatu Asadaare Atinga) and the entire family especially Brother Joseph, Dr. Roger, Rev. Father Paul Atinga and brother Adam.



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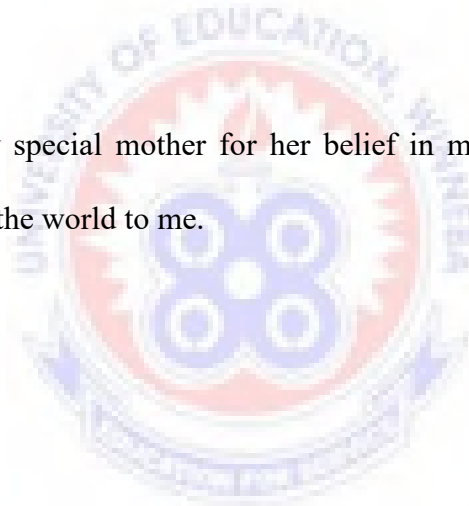


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ABSTRACT

The prime determination of this study is to explore fashion designers' knowledge level; including their understanding and awareness of the contemporary best practices in sustainable fashion practices in Bolgatanga in the Upper East Region of Ghana. The mixed method research design was used to conduct the study. A total of 114 participants including were purposively sampled from an estimated population of 600 fashion designers in the Upper East Region of Ghana. Both Questionnaires and interviews were used as the main data collection instruments. The study found that fashion companies are not changing their ways fast enough to counterbalance the devastating environmental impacts that come with growing so quickly as an industry and Fashion companies have not even begun to take sustainability seriously. Additionally, the study found that both the textile and clothing lifecycles consume more energy and water than the product lifecycles of any other industry hence the significant impact of fashion is not only a result of industry actions but of consumer action, as well. It was therefore, recommended that the fashion industry's large-scale wave of movement toward sustainability is evident; however, there remain questions and challenges to be addressed, hence it is recommended that companies should make gradual but carefully holistically considered steps in the right direction can be much more effective.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Existing fashion industry activities are widely acknowledged to have detrimental environmental, social and economic consequences (Pedersen et al. 2018; Köksal et al. 2017). As a result, a growing body of literature, programs, and resources is available to help people make the transition to more sustainable practices. Fashion companies all over the world are starting to incorporate sustainability strategies, and major corporations often publish reports detailing their sustainability programs and activities (Kozłowski et al. 2015). Similarly, several fashion firms including Small and Medium Size Enterprises (SMEs), are espousing sustainable business practices (Ballie & Woods, 2018). This move is reassuring, as sectors all across the fashion world need to create environmentally sustainable goods and services that take into account environmental, economic, and social factors during their product lifecycles and value chains (Grose, 2019; Gardetti & Torres, 2017; DiVito & Bohnsack, 2017; Fletcher, 2013)

Fashion designers are often cited as key change agents in the transition to a more sustainable fashion industry (Fletcher & Tham, 2014). Early in the design and engineering phase, being constructive is critical to achieving sustainability objectives. The designer's job is expanding, and he or she must now devise plans of action, rather than avoiding the ethical issues that come with manufacturing and consuming fashion (Grose, 2017). During every point of the fashion life cycle, designers have the opportunity to improve sustainability in clothing design (Chapman, 2014). A recurring theme in the literature is the need for designers to include all phases of the design process when creating sustainable fashion.

Innovative fashion design ideas have emerged to help speed up the transition to sustainability. Eco-design evolved from the principles of 'alternative design,' 'attitudinal design,' and 'design

for need,' and has become a central term for those arguing for environmentally friendly product design (Rawsthorn, 2018; Abdulla, 2018; Cimatti et al. 2017). Eco-design is described as a design process that considers a product's environmental impact over its entire lifecycle, from raw materials procurement to manufacturing and use to disposal (Gardetti & Torres, 2017). As a result, design for sustainability (DfS) has progressed, shifting from a technical product-centric orientation to distinguishing design as a channel for large-scale system-level change as DfS has developed (Ceschin & Gaziulusoy, 2016). As a result of DfS's need, a variety of explicit techniques for sustainable fashion design have arisen to assist fashion designers.

Learning and using these tools can be prohibitively expensive because it takes too much time to do on a daily basis. This is particularly important given that designers have cited a lack of consensus and awareness about sustainable fashion and sustainable fashion design as an obstacle to widespread adoption. Because of the complexities of sustainability, designers have found it difficult to incorporate suitable solutions (Connor-Crabb 2017; Bovea & Pérez-Belis, 2012), resulting in designers not using or implementing these techniques or methods in their day-to-day design practices. This situation illustrates an intriguing quandary, as many sustainability solutions consider designers as main change agents.

Innovation, design thinking, systems thinking, and the implementation of an all-inclusive perspective are often mentioned as solutions for sustainability. Designers are thought to be at the crossroads of technical integration, execution, decision-making, innovation, and novelty (Kozlowski et al. 2018). Understanding the various nuanced and interconnected problems that must be considered is essential for sustainable design. Understanding the complexities of sustainable fashion issues can be overwhelming for fashion designers, particularly those who are new to the field (Hur & Cassidy, 2019).

According to Ceschin & Gaziulusoy (2016), a deeper understanding of the complexities and interrelated issues within a sustainable design is needed to achieve a real and lasting effect. This requirement implies that designers' approaches should strive to incorporate creativity into all facets of their practice, vision, and objectives over time, but also to start simple and gradually increase complexity. The primary goal of this study is to determine the level of knowledge held by fashion designers in Bolgatanga, Ghana's Upper East Region, including their understanding and awareness of current best practices in sustainable fashion.

1.2 Problem Statement

Interest in sustainability has grown in recent decades, and it is expected to grow as human societies face problems such as natural resource scarcity and population growth. The literature on sustainability shows how any aspect of business can be linked to it. Continuous sustainability research is needed because there are no ready answers to the various global challenges. As shown in Figure 1.1, sustainability models are often represented as three different but interlocking circles.

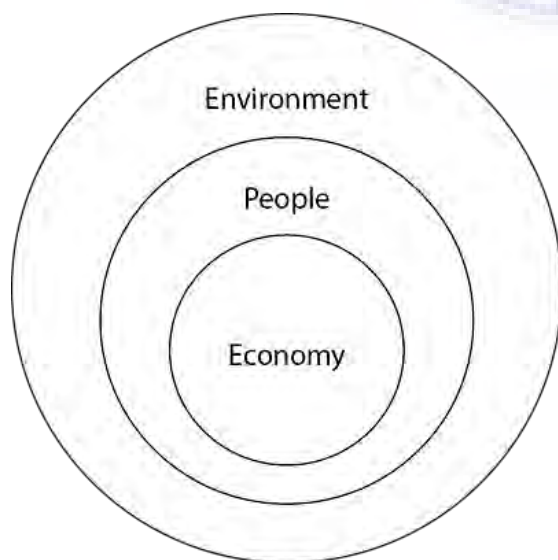


Figure 1.1 Sustainability model

(Source: Researcher's own construct)

The model, on the other hand, shows that the economy and people must coexist under environmental constraints. People and the economy cannot survive without a working climate. The modern economy, contrary to the idea of sustainability, is primarily focused on growth; as a result, business models are based on developing new and superior goods and then selling as much as possible. To become ever more competitive, the economy must undergo a transformation in which businesses prioritize stability over growth (Visser & Crane, 2010). According to Fletcher (2010), as interest in sustainability grows, there is a greater desire to understand the issues surrounding sustainability in the textile and apparel industries, which is exactly what the current study aimed to do.

The fashion and textiles industry is faced with a vast array of issues that are connected by design, education, business, and social practices. This tangle of issues has been dubbed a "problématique" (Obregón, 2016), meaning that an innovative paradigm can only be realized by solving the tangle's mutual entanglements. Sustainable fashion practices have had little effect to date, and they are largely ignored by the fashion industry (see Kozłowski et al. 2019; Gurova & Morozova, 2018; Henninger et al. 2016; Palomo-Lovinski & Hahn, 2014). The fashion industry continues to be inefficient, generating significant waste, exploiting jobs, and making it more difficult to make a significant profit (Todeschini et al. 2017; Palomo-Lovinski & Hahn, 2014).

However, there is a lot of disagreement among design environmentalists about where the focus should be in order to solve these problems (Palomo-Lovinski & Hahn, 2014). Some argue that customers are the primary drivers of transition. Consumers, on the other hand, have little understanding of the logistical or functional issues of fashion design. Designers, on the other hand, are responsible for up to 80% (Palomo-Lovinski & Hahn, 2014) of all clothing items launched, and they have the power to influence how fabrics are sourced and apparels are made, cared for, and eventually discarded. In Bolgatanga, Ghana's Upper East Region, the current

study investigates fashion designers' knowledge levels, including their understanding and awareness of contemporary best practices in sustainable fashion practices.

Fashion is generally recognized to play important roles in people's lives as a social catalyst, a communication channels, a mode of self-expression, and an art form (Lee et al. 2016; Black, 2013). People could use fashion to describe their individual style and personality, find a social niche, or express their beliefs. And a man is described by his clothing. "Naked people have little or no social standing" (Twain, 1927, p. 6). Fashion's influence is undeniable; nevertheless, the destructive repercussions of today's fashion environment must also be acknowledged.

Fashion and Textiles are a huge part of the global economy. The clothing and textiles industry hires 9.3% of the world's workforce and generates 4% of global exports (Caniato et al. 2012). In 2011, the clothing and fashion industry brought in \$3 trillion in sales (Martin, 2013). Due to its global scale and the vast environmental and human resources needed for the manufacture and consumption of fashion items, the fashion industry has a significant impact on the global environment (Singh, 2019; Choi & Han, 2019; Caniato et al., 2012).

Furthermore, the new trend of fast fashion consumption and production has resulted in an unparalleled decrease in the production time, price, and lifespan of fashion items, resulting in an overconsumption trend and a desire to pay the lowest possible price for the greatest number of products (Morrissey et al. 2019; Hethorn & Ulasewicz, 2008). This mindset, coupled with a lack of understanding and interest in where clothes come from, who makes them, and for what price, has contributed to a disillusioned view of fashion in terms of sustainability (Hethorn & Ulasewicz, 2008, p. xix).

Designers have the ability to pave the way for a more realistic and transmuted global society, although certain people are unaware of the implications of the current fashion model. According to Fletcher and Grose (2012), the creativity of the designer, as well as his or her

capacity to make significant leaps of imagination, has the power to transform not just how things are planned, but also how people think and behave.

The way a designer thinks about sustainability can have a significant impact on the choices they make during the design process. In a study on the effects of introducing a sustainable fashion retail supply chain in Europe, researchers identified two influential approaches to sustainability thought. First, those who accept individual responsibility for past and future environmental efforts, and second, those who fault others, such as the media, government, and the consumer (Brito, 2008). Individuals who internalize transparency are more likely to aim for perfection and devise novel solutions to environmental and social problems (Brito et al., 2008). Many externalizers, on the other hand, are only concerned with economic survival and consider other issues as the burden of others (Brito et al., 2008).

Fashion in the sustainable concept necessitates innovators willing to go above and beyond and make the requisite sacrifices to ensure that fashion development and consumption favour the product, people, and environment (Palomo-Lovinski & Hahn, 2014). Fashion designers who embrace sustainability in their design practice are more likely to be counted among those who internalize responsibility to some extent. As a result, they are more likely to strive for perfection and devise novel ways to react to the challenges of sustainable fashion.

The textiles and apparel supply chain's product development process provides an opportunity to consider several factors that can help decide whether a fashion product has a positive or negative effect (Kozlowski et al. 2018; Brito et al., 2008). The efforts of a visionary designer who is always looking for new ways to change the fashion industry may result in opportunities to improve the long-term sustainability of the entire apparel lifecycle. As a result, the study's primary concern is the unsustainable nature of the fashion industry, in which fashion designers play a role. It is important to explore the environmental consequences of the fashion industry

and how fashion designers can transform their design practices to be more environmentally friendly. If the existing industrial model is maintained, humans can continue to cause irreversible environmental damage. As a consequence, for fashion to be genuinely sustainable, a paradigm shift is needed.

1.3 Purpose of the Study

The prime determination of this study is to explore fashion designers' knowledge level; including their understanding and awareness of the contemporary best practices in sustainable fashion practices in Bolgatanga in the Upper East Region of Ghana. It is also to gain an understanding of designers' knowledge of sustainability and the current practices employed in sustainable fashion design to appreciate the variables that inspire designers' choices during product design as well as the development process for sustainable fashion.

1.4 Research Objectives

1. To identify the current status of sustainability in the fashion industry in Ghana
2. To assess the level of sustainability knowledge of fashion designers in Bolgatanga in the Upper East Region in terms of their understanding and awareness of the contemporary best practices in sustainable fashion practices
3. To determine how fashion designers in Bolgatanga in the Upper East Region are utilizing their knowledge of sustainability in their business practice and how they can contribute to change the current paradigm

1.5. Research Questions

1. What is the current status of sustainability in the fashion industry in Ghana?
2. What is the level of sustainability knowledge of fashion designers in Bolgatanga in the Upper East Region in terms of their understanding and awareness of the contemporary best practices in sustainable fashion practices?
3. How are fashion designers in Bolgatanga in the Upper East Region utilizing their knowledge of sustainability in their business practice, and how can this contribute to change the current paradigm?

1.6 Significance of the Study

A thorough understanding of fashion designers' current practices, as well as attempts to create sustainable fashion, can provide a valuable perspective on where sustainability currently stands in Ghana's fashion industry and what the next step for a sustainable fashion sector could look like. Most of the recent literature focuses on overviews of current sustainable design practices, user perspectives and effects on sustainable fashion, and the consequences of a sustainable supply chain. However, there is a paucity of extensive research into the perspectives, insights, and skills of practicing sustainable designers. This research will allow for the collection, review, and publication of evidence for a better understanding of fashion designers' sustainability awareness and the importance of the fashion design and production process for sustainable fashion in Ghana.

1.7 Limitations

To begin with, funding the project was difficult due to the researcher's limited resources. Second, the unfortunate corona virus outbreak presented a threat. When all stores were closed

and movement was limited during the lockout, it was a nightmare. It was difficult to visit the sewing centres to observe the activities of the apprentices and their masters/madams and gather information for the study work because of the laydown protocols that had to be followed.

1.8 Delimitations

The study believed that most fashion designers who use a sustainable design approach have a basic understanding of sustainability concepts and that fashion designers' awareness of best sustainable design practices would have a direct impact on design and construction decisions. In view of the limitations imposed in the way of the researcher; the current study centered on the sustainability of fashion in relation to the awareness level of fashion designers in Bolgatanga, Upper East Region, and did not include other parts of Ghana, so the findings should be interpreted with caution.

1.9 Organization of the Study

This study is structured into five chapters. Chapter one presents the background of the study, the statement of the problem, research objectives, research questions, and the organisation of the study. The literature review is presented in chapter two. Chapter three presents the research design, population, sampling technique as well as sample, data collection instruments, data analysis etc. Chapter four presents the analysis of the data collected. Summary, conclusion and recommendation, as well as the implication for further research, are discussed in chapter five.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter examines ideas and comments about fashion designers' knowledge levels, as well as their understanding and awareness of current best practices in sustainable fashion practices in Bolgatanga, Ghana's Upper East Region. The analysis is focused on the research's particular objectives. In science, a study of the literature is considered a preliminary step in gathering data. It also provides researchers with background information on the subject they are researching. As a result, they are able to carry on a tradition, contextualize their work, and learn from previous endeavors (Hart, 2018).

According to Randolph (2009), a review of relevant literature is a process in which a researcher attempts to find, locate, read, and analyze previous studies, observations, views, and comments that are relevant to his proposed study. This type of analysis is designed to give the researcher a thorough understanding of the state of the art in the field in which he is employed. It allows him or her to see what areas have been protected, what needs to be covered, and what tactics to use in his investigation. Dunne (2011) confirms that literature review enables researchers to be substantively located in relation to what has gone before by recognizing what is already known. It also offers insight into where new research can contribute and continues the process of continuous focusing.

As a result, recognizing an underlying reality is a first step in addressing fashion sustainability. Fashion is a polluting and resource-intensive industry, and its long-term sustainability hinges on reducing its environmental and social footprint in the garment manufacturing process. That means lowering the environmental impact of growing and producing textile fibers, as well as creating a base of good practices at all levels.

2.2 Definition of Concepts

2.2.1 Knowledge of sustainability in fashion

Subjective and analytical knowledge are two types of knowledge (Raju et al. 2015). Subjective information refers to a person's trust in his or her knowledge (Kong et al. 2016). Only what the person already knows is referred to as objective intelligence (Brucks, 1985). According to Brucks (1985), both forms of expertise are likely to influence consumers' levels of trust and decision-making behavior. If a person lacks trust, he or she might be more motivated to look for more details (Chang, 2004). Sustainable designer behavior, especially in the apparel industry, may benefit from knowledge. Fashion designers would be more likely to make sustainable choices if they are more mindful of the effects of apparel design and construction.

Kang, et al. (2013) discovered a positive relationship between customer awareness and perceived personal importance of sustainable clothing, specifically organic cotton, and purchasing intention. Consumers were more likely to buy organic cotton goods if they were more knowledgeable about sustainability, according to the researchers (Kang et al., 2013). The disparity in knowledge before and after education was not evaluated in their research, which focused solely on the consumer's base level of knowledge. Since slow fashion is a relatively recent concept, it is possible that customers are unaware of the environmental benefits of buying slow fashion clothing. Consumers with more awareness of slow fashion and its environmental benefits may have a more positive attitude toward slow fashion items, making it easier for them to shop with the term in mind.

2.2.2 Sustainability

Sustainability refers to fulfilling current human needs without jeopardizing future generations' ability to fulfill their own. Humans need both social and economic capital in addition to natural resources. Environmentalism isn't the only aspect of sustainability (Ben-Eli, 2018; Moore et al.

2017). Concerns for social justice and economic growth are ingrained in most sustainability classifications. While the philosophy of sustainability is a relatively recent concept, it has roots in previous movements such as social justice, conservationism, internationalism, and others with long histories (Ben-Eli, 2018; Missimer et al. 2017).

As a policy principle, sustainability can be traced back to the Brundtland Report of 1987. The tension between humankind's hopes for a better existence on the one hand, and nature's limitations on the other, was the subject of that text. The definition has evolved over time to include three dimensions: social, economic, and environmental. However, despite their widespread use in scientific literature, the private sector, and educational institutions, the concepts sustainable, sustainability, and sustainable growth have yet to reach a consensus on the idea. There is a huge range of ideas in the literature that are all related to sustainable development in some way (Ben-Eli, 2018; Lindsey, 2011).

Nonetheless, the number of perspectives and connections to the environment, as well as the field, may cause these connotations to differ (Montiel & Delgado-Ceballos, 2014). The lack of clarification in the terms elucidates the principle of multiplicity, pointing to a convergence among various areas of epistemology (Delgado-Ceballos et al. 2014). Bowen & Aragon-Correa (2014) claim that the inability to decode the environmental and sustainable development debate is due to the expressions' polysemy, which compromises their reliability. As a result, research into these concepts must differentiate between their various uses, recognizing that they are dependent on cognitive orientation. Despite the fact that these expressions represent opposing ideas, their quest for a balance between human needs and the environment, as well as their attempt to comprehend both sides' multifaceted interaction structures in order to establish and extend their significance, is widely accepted (Olawumi & Chan, 2018).

As a result, uncertainty and a lack of clarification about the idea of sustainability is a recurring issue in sustainability research. Several studies devoted to the study of the definition of sustainability have commented on the misunderstanding it causes and the reasons for its lack of precision, such as its wide range of applications, its varied and often contradictory connotations, and the massive number of descriptions in response to the field or political setting in which the expression is used (Saxena & Khare, 2019; Wu & Li, 2019; Ben-Eli, 2018). The concept's diversity is such that, at least in terms of the word "sustainable development,"

Again, a lack of clarification about the concept of sustainability causes problems for investigators because it can make it difficult to operationalize the concept, lead to inconsistency in debates about the issues, and compromise the validity of studies. Researchers, on the other hand, also use the word sustainability to refer to a set of social environmental values or attributes in human activities (Clayton & Radcliffe, 2018). These behaviors may be linked to goods or processes, but they all point to a connection between humans and ecosystems. As a result, these behaviors may be considered to be a part of social-ecological processes.

As a result, from this viewpoint, sustainability is described as the incorporation or application of socialecological criteria during the preparation, design, and/or operation phases of specific reference systems (Ben-Eli, 2018; Moore et al. 2017). Humanity's aim is often known as sustainability. The term "sustainability" is used once more to refer to society's goal. Researchers sometimes assert that a system is viable because it serves some purpose. In this light, sustainability is an idealistic view of the relationship between nature and community in reference systems. What reveals the connotation of sustainability in this system of statements is the orientation rendered by these statements to those resolves or objectives.

Sustainability-related ideologies and human behaviors stem directly from certain motives, objectives, or social standards. As a result, this use reveals that the idea of sustainability has a

teleological connotation. As previously mentioned, the term "sustainability" has a variety of connotations, which also differ based on the viewpoint of the person interpreting it. This varies by society, multinational companies, small business owners, and individuals attempting to define what constitutes a healthy lifestyle (Missimer et al. 2017). However, expressing this definition is not straightforward, and there are many distinct and contested connotations to be found. To others, the concept of sustainability is relatively new, dating back to a meeting held in the 1970s. The term "sustainability" was coined at a United Nations conference on the human climate (Foley, 2017).

The most common definition of sustainable development is development that meets current needs without jeopardizing future generations' ability to fulfill their own (Ben-Eli, 2018). Sustainability is a requirement and a primary concern in the twenty-first century, and it is often associated with corporate social responsibility (Saxena & Khare, 2019), educated buying decisions, and an evolving green focus at some businesses (Saxena & Khare, 2019). (Wu & Li, 2019). The three most popular concepts of sustainability are: an action that can be continued indefinitely without causing harm; doing unto others as you would have them do unto you; and meeting the needs of the present generation without jeopardizing the needs of future generations (Ben-Eli, 2018; Clayton & Radcliffe, 2018).

Sustainability, according to Emas (2015), is about human relationships with themselves, their cultures, and their institutions, not just our relationship with the world. Sustainability entails complex and evolving environmental dynamics that impact human livelihoods and well-being on a global and local scale, with intersecting ecological, economic, and sociopolitical dimensions. Organizations are ingrained in society and embody the service they provide, which poses significant concerns. The challenge in the fashion industry is to see if all of the various product manufacturers can be ethically secured and accounted for, as well as the labor used to

manufacture the fabric, its transportation from factory to retail store, and finally the garment's aftercare and disposal (Ben-Eli, 2018).

Sustainability is described as the analysis of how natural systems work, remain diverse, and produce what they need to keep environmental science in check. It also acknowledges that human society necessitates the use of resources in order to maintain man's modern way of life (Epa 2016). Throughout human history, there have been many occasions where humanity has harmed its own climate and jeopardized its own chances of survival. Sustainability considers how humans can live in harmony with nature while still protecting it from harm and destruction.

Humans now live in a modern, consumerist, and largely urban world, and they consume a vast amount of natural resources on a daily basis. People in urban areas use more energy than those in rural areas, and urban centers use significantly more energy than the national average to keep streets and civic buildings illuminated, fuel appliances, heat, and meet other public and household power needs. This isn't to say that sustainable living is just for people who work in cities. Every year, people are expected to use about 40% more energy than they can replenish (Carley & Spapens, 2017). The focus of sustainability and sustainable growth is on balancing conflicting needs, such as the need to advance technologically and economically while still protecting the ecosystems in which humans live. Sustainability, as Epa (2015) points out, is about more than just the environment; it also involves our collective wellbeing in ensuring that no one suffers as a result of environmental legislation.

2.2.3 Fashion

It's important to understand the difference between fashion and clothes in order to appreciate it. Fashion is not a physical object, but rather a socially and culturally created phenomenon that cannot occur without the use of physical objects. Fashion is a completely institutionalized cultural and social belief system expressed through a variety of items, including clothes (Davis,

2017). While fashion is an intangible term, it is supported by a complex and tangible structure. Every stage of development is covered by the scheme, including cotton farming, spinning textiles, sewing garments, transporting the finished product, and even brand awareness campaigns (Henninger et al. 2016).

The fashion industry is used as an umbrella term to refer to supporting structures in this report, and the term fashion is used to refer to the underlying belief system. According to Kuchta (2017), the term fashion-ology refers to the study of fashion as a social and cultural phenomenon. Wolf (2006) emphasizes the importance of distinguishing between how fashion and clothes are produced and consumed. Fashion is a collaborative activity in its production and distribution, according to Melchior & Svensson (2014), and a designer plays a single but essential role in the creation of this symbolic, ambiguous product.

Fashion, according to Fletcher (2014), can be considered an art form. Fashion, like art, is a social process that cannot be understood outside of its social context. Fashion is admired, projected, and conveyed through clothing and other material items, whereas art is appreciated through observation and participation. The introduction of exhibits showcasing garments by well-known fashion designers in major art museums is proof that fashion is being recognized as art (to Melchior & Svensson 2014; Kim 1998). Fashion's ephemerality is an important trait. Fashion is the product of increasingly changing widely recognized visual and cultural norms. The fashion industry supports this impermanence of fashion because it generates profit from constantly evolving fashion trends, but this really is one of the factors why fashion is at odds with sustainability (Fletcher, 2014).

Although fashion may be considered an art form, the words quick fashion and fad refer to a method of manufacturing relatively inexpensive, trendy outfits at a high rate and volume in order to fulfill and inspire consumers' desire to look fashionable. Quick fashion, in other words,

is a term for trendy clothing created inexpensively soon after the seasonal presentations of fashion collections; fad refers to a short-lived trend characterized by garments or other items that are desired by fashion-forward consumers but are not generally constructed with timeless appeal or practical use in mind (Gupta, 2018; Fletcher, 2010).

2.3 Principles of Sustainability in Fashion

Fashion sustainability is just one facet of the larger problem of long-term development. Sustainable development is described as development that meets current needs without jeopardizing the ability of future generations to meet their own (Frazzoli et al. 2009). This broad statement stems from the connection between a rapidly evolving global world and a limited-resource natural environment. It was once commonly thought that you could either protect the environment or improve the economy, but not both (Markovska et al. 2013, p. 1). In 1987, the United Nations' Brundtland Report formally developed the new concept that economic growth and environmental stability must be regarded in tandem to sustain current development and allow for future change.

In the 1990s, the World Conservation Union (IUCN) developed a complementary concept for sustainable development that called for not only preserving but also improving existing conditions while safeguarding the environment (Vezzoli & Manzini, 2008). The resulting definition of sustainable development takes into account society's and the environment's current needs and weaknesses, while emphasizing the connection between poverty reduction, environmental change, and social equity. The clothing and fashion industries have historically had one of the least open supply chains. Many businesses still lack full interaction with their entire supply chain, resulting in a lack of clarity in how materials and goods are manufactured (Yang et al. 2017; Shen, 2014).

This lack of supply chain transparency is a problem since customers trust manufacturers' quality and sustainability checks without challenging the tracking of the goods they buy (Moretto et al. 2018). Academics have spent a lot of time looking at the long-term viability of product design and production. More awareness about extending product lifecycles is required in the fashion industry to support sustainable development (Niinimäki & Koskinen, 2011). Sustainability is now seen through a more holistic and global lens, according to Prothero et al. (2010), affecting the goods customers want to buy. Many design models for sustainable products have been suggested, including Design for Sustainability (DfS), which aims to integrate sustainability into product design by including social, economic, and institutional aspects (Spagenberg, 2013).

2.3.1 Dimensions of Sustainability

Traditional sustainability models require three components: environmental, social, and economic. These, however, can be expanded for sustainable fashion design. Figure 2.1 depicts Kozlowski et al (2019)'s approach, which includes a five-dimension model for sustainable fashion that incorporates aesthetic and cultural dimensions. Aesthetic sustainability is embodied at the product level, while cultural sustainability necessitates a systems-level approach.

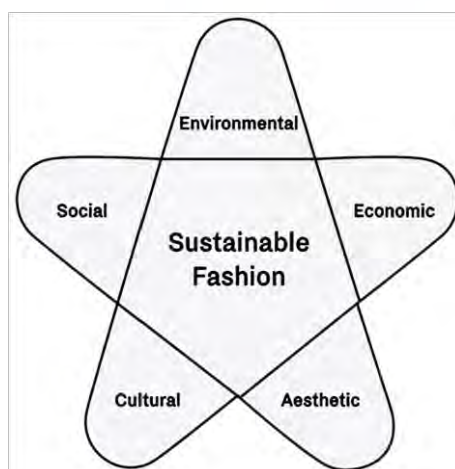


Figure 2.1 Five dimensions of sustainable fashion

Source: Kozlowski et al. (2019)

The term "esthetic sustainability" according to Harper (2017) is called timelessness, longevity and constant appeal for objects such as clothing. Chapman's (2015) work, as well as Fletcher's (2010) acknowledgement of the need for slow fashion, validate that aesthetic sustainability is an important factor in sustainable fashion. Fashion designers must understand the long-term viability of an individual's aesthetic experience when designing for sustainability (Flood Heaton & McDonagh, 2017). The cultural component of sustainability stems from the fact that most conceptions of sustainability fail to distinguish between cultural structures, value systems, norms, behaviors, and ideas, and fail to consider variations in local economies and ecologies. Cultural preservation entails moving beyond the analysis of social ethics to a recognition of labor and resource abuse, as well as the legacy of colonialism.

According to Essingler (2011), as companies create new paradigms of sustainability and environmental design, designers should also recognize cultural colonialism. When designers understand the cultural context for sustainable development and consumption, this encourages more holistic perspectives. Modern Western society tends to emphasize piecemeal policies and/or promotes the use of more expensive sustainable goods. As a result, the Western approach is often based on recycling rather than reuse and reduction (Kozlowski et al. 2019). Recycling does not aim to prevent usage, but rather maintains the notion that existing consumption levels are acceptable as long as a recycling scheme is in place.

Sustainability is built into indigenous cultures' way of life (Poff, 2014). Since the majority of clothing is manufactured in developing countries, the fashion industry should accept inequities in the supply chain. These are also the individuals and groups that could be harmed by the fashion industry. This is a field of sustainable fashion that has yet to be discussed in scholarly literature, but has been introduced into the sustainable fashion discourse by academics and fashion practitioners (Kozlowski et al. 2019). The slow fashion movement advocates for

increasing the functional life of apparel and slowing down the fashion system by developing slow culture through a systems thought lens; central to this is the recognition that a sustainable fashion system requires a cultural change (Fletcher, 2010). To collectively transform fashion, its cultural preservation must be recognized and discussed. Within the fashion industry, there is an industry culture that is expressed in industry norms and values. Cultural sustainability acknowledges the processes as well as the inherent virtues and principles found in a fabric.

2.4 Current Issues in the Fashion Industry

Sustainable fashion is a crossroads that have evolved from sustainable growth. Because of its prominent global presence and environmental effect, the mode industry is primarily suitable for improvements and creativity on sustainable growth. Currently, the fashion industry is a three billions of dollars industry in textiles and clothes (Norum 2018) with a worldwide workforce of up to 40 million (Black, 2013). The fashion industry has long been a source of global growth and advancement worldwide (Shukla & Gupta, 2019). The invention of mass-produced, ready-to-wear mode has led to new employment in the industry in the sewing and production sectors in particular (Garg, 2019; Welters, 2008).

No appliance can mimic the skill of manufacturing the human hand and the need for workers prevails. To this day, no appliance. The fashion industries offer developing countries an important opportunity to build employment for a large group of skilled workers, whom companies pay low wages for labour-intensive production processes, as they did in the United States and Europe in the last few centuries (Fernandez-Stark et al. 2011). Today, three-quarters of global clothing exports are accounted for in low-income countries (Frenandez-Stark et al., 2011). But when economic progress overlooks the importance of social justice and protection of the environment, major implications arise (Welters, 2019)

While the fashion industry can provide developing nations with a great economic opportunity, development is always at the expense of those in the factories and the fields. The new paradigm in the fashion industry is to get the best goods at the fastest possible cost (Black, 2011). The environmental costs are high, in addition to the social and economic impacts of the fashion industry. 'Holistically speaking, the lifecycles of textiles and garments consume more material and energy than any other industry other than building and agriculture' (Black, 2013, p. 9). Researchers also found that the major effect is not only caused by the activities of the industry, but also by customer action.

2.5 Addressing Fashion and Sustainability

The need to deal with the problems of contemporary fashion is obvious; however, the reality is that the problems go beyond everything that can be resolved by one individual, company or nation. Things occur over the life cycle of a garment, from the manufacture, manufacture and distribution, retail and use of raw material, cloth and apparel, to the final disposal of fashion products (Macchion et al. 2018; Kohtala, 2015; Gam & Banning, 2011). In addition, a global network of designers, manufacturers and customers is made up of the apparel industry. Because everyone plays a part in the overall life cycle of the product, the resulting problems are sometimes a responsibility of everyone.

Because of the importance of consumer measures for sustainable fashion growth many studies in sustainable fashion have focused on consumer habits (Cervellon & Wernerfelt, 2012). Previous research have identified the need for consumers to be educated so that they can decide better when they purchase and care for fashion items. Decisions taken in the design process will also definitely affect the behaviour of the consumer with respect to the sustainable buying, usage, care and disposal practices (Fletcher, 2010). Fashion designers need to take account of

the customer needs and the lifestyle, since the effectiveness of a sustainability campaign also depends on consumer behavior after buying (Fletcher, 2010).

Although sustainable development education must continue, customer perspectives are changing. The fashion industry and the designer must continue to evolve and innovate as customers improve their behaviour. The challenge of designing and executing sustainability programs remains a challenging task for designers, if fashion designers are primarily concerned with their activities in the production and design phases of the fashion product line, according to the scale and supply chain of the company. Given that the current fashion system includes continuous patterns and the unrelenting demand for something new, a slow and careful process will involve changing the properties of a mature and saturated industry. However, fashion designers have an excellent chance to create innovative solutions (Lewis et al. 2017; Bocken & Short, 2016).

Studies show that choices made in the design stage have a huge effect on the lifecycle sustainability costs of a product (Armstrong & LeHew, 2011; Gwilt, 2014). In particular, Fletcher (1999) estimates that up to 80% of the environmental and economic costs in the product design phase are calculated. The actual figures are based on the fashion designer's position. Fashion designers need to consider the main phrases of pre-production, production, delivery, use and end-of-life within the life-cycle, due to their strategic role as the original decision makers in the product creation process. Gwilt, Gwilt, 2014; Fletcher & Grosse, 2012; Palomo-Lovinski & Hahn, 2016). The natural, social or economic impacts of a garment are affected by any point of the garment life cycle. Each stage needs a number of considerations for sustainability. So it is important to ensure that no sustainability program has an inadvertent negative effect at any other point of the clothing life cycle.

2.6 Design for Sustainability

Although the recognition of the topic of unsustainable production and consumption began at the end of the 20th century, in the 1970s the design of sustainability was established (Keitsch, 2012). Nevertheless, in Chapman's (2014) account, existing methodologies of sustainable design remain mostly symptomatic since industrial production practices remained unchanged for decades. Similarly, McDonough & Braungart (2002) influenced fashion designers to think creatively about the fashion system and work beyond only producing "less evil" fashion items. McDonough & Braungart (2002) emphasized that designers are commonly inclined to reduce, prevent, decrease, maintain, reduce and stop (45). (p. 29).

McDonough & Braungart (2002) also stress, that if the focus is just to overcome the problem, the greater concern about what causes the problems can sometimes be missed by the sustainable initiatives. These symptoms are the products of a linear methodology for thinking of output and consumption of fashion (McDonough & Braungart, 2002). It concentrates on the parts of a system that seem to be malfunctioning rather than on the entire system where the problems arise (Nguyen & Bosch, 2014). There is nevertheless a consensus that 'the best way to address complex social, economic or environmental problems of today is by recognizing the dynamic interplay of all elements in a system' (Nguyen & Bosch, 2014, p. 240).

Lawless and Medvedev (2016) created a graphic illustration of sustainability considerations during a fashion product life cycle, which was in line with this philosophy of system-based thought and to assist in theorizing the extent of ecological reflection in an ideal sustainable fashion design practice. This model depicts the three pillars (environmental, social and economic) of sustainability and provides instances of issues at each point of the lifecycle (Preproduction, Production, Utilization, Distribution, and End-of-Life).

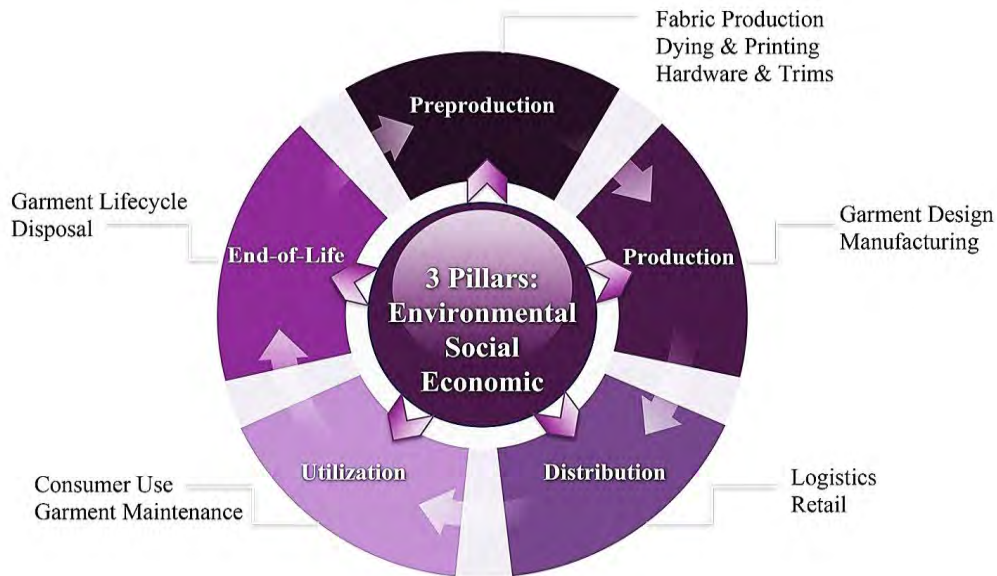


Figure 2.2 Product Lifecycle

Source: Lawless & Medvedev (2016)

2.6.1 Levels of Sustainability Intervention

The conflicting and often nuanced essence of sustainability is often overwhelmed, according to Lawless and Medvedev (2016), when time, cost and consumer acceptance of fashion products is critically important. Fashion designers should expect to accept both intrinsic sustainability measures and abstract ways of thinking about sustainability when it comes to timelines and deadlines. For sustainability to be seen, a multi-faceted structure of designers, producers, customers needs a wide variety of principles to be considered. Granting the creative approach of Fletcher & Grose (2012) to analyze these sustainable design initiatives with regard to their effect on the development of a sustainable fashion industry can be overwhelming if they attempt to use sustainable design strategies.

Fletcher & Grose (2012) specifically categorized sustainable development programs based on the depth of their consideration of sustainability. They maintain that sustainable fashion design has three (3) layers of thought. The first stage refers to sustainable innovation in fashion goods,

which focuses on technological and commercial solutions for issues of sustainability (Fletcher & Grose, 2012). Often the simplest, fastest solution to sustainable problems is this level of thought, which functions as a first position in a complex system (Fletcher & Grose, 2012). These explanations are used to analyze material choices, construction methods, distribution approaches and dispose of solutions for the lifecycle analysis of mode products.

These are the realistic choices made every day by many fashion designers. Some examples of fashion design innovations include the material use of organic or recycled polyesters, the use of natural or low impact dyes or marks of best treatment (Fletcher & Grose, 2012). The next stage of design thought seeks to find creativity in mode systems based on sustainability (Fletcher & Grose, 2012). This course aims to broaden product-based scrutiny to focus on business models and economic objectives which currently form the fashion industry (Fletcher & Grose, 2012).

Such thinking needs not only technological and market-oriented solutions but also moral and ethical considerations to resolve problems of sustainability (Fletcher & Grose, 2012). In general, these resolutions are much more complex and difficult to implement because they often conflict with current societal standards and expectations (Fletcher & Grose, 2012). There are many examples of the second combination of sustainability, such as cradle to cradle design, multifaceted clothing creation, empathy design and disposal design (Fletcher & Grose, 2012).

The third and last stage of design thought is used as the transformation of fashion design practice often involves the examination of the different positions fashion designers can take on ingenious sustainable initiatives (Fletcher & Grose, 2012). This level of thought is a move away from the commercial designer's conventional role to revalue how design ideas can be implemented in other segments of the company. Fletcher & Grose (2012), therefore, defines a

variety of scenarios for the unique positions of fashion designers, such as designers, facilitators, campaigners, and entrepreneurs.

The quest for a sustainable fashion industry needs all three stages of sustainability thinking. The levels match the depth of thought that needs to occur in the process of sustainable design. Designers, for example, must not only consider their manufacturing choices, but also look at the complete system of disposal (2nd level) and explore ways to improve consumers' awareness in order to make use of their sustainability initiatives (3rd level).

2.7 Sustainable Design Strategies

2.7.1 Preproduction

The preproduction process of the fabric lifecycle considers design decisions that decide a garment's physical attributes. This stage includes, but is not limited to, the material of a fabric, dyeing and printing, as well as hardware and trims.

- ❖ **Materials:** Sustainable designers must understand fabric qualities in order to minimize the negative effects of fabric creation and usage. Although no fabric is fully sustainable, some are better than others (Fletcher & Grose, 2012). The materials mentioned below were developed with the aim of being environmentally friendly. Organic cotton is a common natural fiber. Organic cotton certification requires the use of no chemicals during the cotton cultivation process, including artificial fertilizers, pesticides, and insecticides (Williams & Xiaocheng, 2018). Cotton production must meet certification requirements from farm to finished garment in order to be classified as "made from organic cotton" (Gardetti & Muthu, 2018). The aim of organic cotton is to encourage natural cotton cultivation practices in order to improve the health and working conditions of cotton growers while also benefiting the environment.

- ❖ **Biodegradable fabric** is another recycled material being researched. This process “involves microorganisms, light, air, and water breaking down a fibre (or garment) into simpler substances in a non-toxic process that occurs over a relatively short period” (Fletcher & Grose, 2012, p. 17). Natural fibers are biodegradable, such as those made from plants and animals, whereas synthetic fibers, such as polyester or nylon, are not (Fletcher & Grose, 2012). When making biodegradable garments, designers must keep in mind the fiber blends used in their fabrics. Natural and synthetic fiber fabrics slow down the decomposition process (Fletcher & Grose, 2012). Fabric decomposition is a better option for the environment than dumping clothes in a landfill. Another material made with sustainability in mind is recycled synthetic fabric. To make this cloth, a synthetic fiber, such as polyester, is broken down into a polymer and then re-extruded into a new product. This method uses roughly 80% less energy than the processing of virgin fibers (Fletcher & Grose, 2012). Polyester manufacturing accounts for 75% of textile production and can take up to 200 years to decompose in a landfill (Black, 2011). A 100% synthetic fabric, as opposed to a synthetic and natural fiber blend, can, on the other hand, be continually recycled if disposed of through the appropriate fabric recycling channels at the end of its useful life.
- ❖ **Dyeing and Printing:** When designing for sustainability, the aesthetic properties of fabrics should be considered. The color of a garment has a huge effect on its commercial appeal. The fashion industry's changing color trends are "the easiest, cheapest, and most certain way to change appearance, attract a buyer, and guarantee an additional purchase" (Fletcher & Grose, 2012, p. 37). The visual influence of dyeing and printing clothing is obvious. However, finishing processes such as scouring, bleaching, dyeing, and printing must be taken into account. During the apparel production period, these processes are considered to have the greatest environmental effects (Nayak et al. 2019).

Natural dyeing is an example of a dye technique that focuses on sustainability. Natural dyeing is accomplished by using Plants that are available seasonally, as well as animal and mineral sources (Fletcher & Grose, 2012). According to study, “natural dyes can have a range of benefits, including lower energy and water consumption, decreased allergenic effects, and easier biodegradability” (Orzada & Moore, 2008, p. 307). Natural dyes, on the other hand, lack the strength and colorfastness that synthetic dyes do (Nayak, 2019). As a result, designers who use natural dye techniques work to question preconceived notions of what constitutes a suitable pigment (Fletcher & Grose, 2012). Screen printing, discharge printing, and heat-transfer printing are all methods of printing are some of the current printing techniques used in the fashion industry. Each has drawbacks in terms of long-term viability (Orzada & Moore, 2008). When opposed to traditional printing methods, digital printing has many environmental benefits (Orzada & Moore, 2008). Patterns and colors are managed and interpreted by computer software during the digital printing process. Printing data is sent to a fabric-printing system, and dye is deposited directly on the fabric's surface. Digital printing has a higher fixation rate than traditional printing methods and has a lower overall environmental effect (Orzada & Moore, 2008). The amount of dye used in the digital printing process is carefully regulated, and thickeners, which are part of the waste cycle in traditional printing, are not used.

- ❖ ***Hardware and Trims:*** Since hardware and trims make up a small percentage of the total fabric, they are often ignored in sustainability considerations (Fletcher & Grose, 2012). These products, however, may have a significant effect on a garment's environmental impact at the beginning and end of its life cycle (Fletcher & Grose, 2012). Several industries, like mining and oil, are used in the manufacture of buttons,

zippers, and other trims. The resulting environmental and social consequences must be considered (Fletcher & Grose, 2012). Furthermore, the type of hardware used on a garment can affect its longevity, as missing buttons are much easier to repair than broken zippers (Fletcher & Grose, 2012). When designing sustainable fashion garments, designers must examine the development and usage consequences of hardware and trims. Choosing non-electroplated metal hardware, such as metal buttons and zippers, is one of these factors (Fletcher & Grose, 2012). Metal electroplating necessitates a large volume of water and chemicals in the manufacturing process, resulting in a substantial amount of radioactive waste (Fletcher & Grose, 2012). “It is estimated that for every 3,300 metal buttons made, 500 grams of hazardous sludge are produced” (Fletcher & Grose, 2012, p. 52). Instead of waiting until the end of the manufacturing process to treat the problem, designers may remove it from the start by using non-corroding metals such as copper and stainless steel (Fletcher & Grose, 2012).

2.7.2 Production

The manufacturing process provides numerous opportunities to address sustainability concerns that arise throughout the product life cycle of a piece of clothing. There are many factors to consider, but for the purposes of this paper, measures concerning manufacturing processes, supply chain management, and operational efficiency will be discussed.

- ❖ **Production Techniques:** The cut-and-sew apparel manufacturing process is expected to produce 10- 20% of fabric waste (Enes & Kipöz, 2019). Cut-and-sew processing is suitable for all fabric styles, including knit, woven, and nonwoven, and involves cutting pattern parts from a length of fabric and stitching them together (McQuillan, 2019). Zero-waste design is a patternmaking design technique developed to reduce fabric

waste. This design technique aims to use up the entire length of fabric by interlocking pattern bits, resulting in no waste during the cutting process (McQuillan, 2019). The garment parts are knitted individually and then sewed together in fully-fashioned apparel manufacturing, resulting in minimal waste (McQuillan, 2019). Since an industrially viable production method for fully-fashioned woven apparel has not been established, this technique is primarily used in knitted cloth (Rissanen, 2008). *Integral knitting* is a process of manufacturing that involves a knitting machine creating a finished garment (Rissanen, 2008). This is an attractive manufacturing choice for sustainable fashion designers because it produces no fabric waste and eliminates stitching from the construction process (Rissanen, 2008). A-POC is an abbreviation for A Piece of Cloth, which is a manufacturing process close to integral knitting in that a garment is made with little to no sewing (Sharma, 2018). This method of processing, on the other hand, necessitates customer participation. A flat tube of knitted fabric with strategically positioned join lines is purchased by the customer. The finished garment can then be cut along the lines by the customer. However, how much fabric the buyer removes from the garment decides how much fabric is lost during the manufacturing process (Rissanen, 2008). *Handcrafting* is a production process that is not feasible for mass production but has been used by many designers and small businesses to produce high-quality, one-of-a-kind, and low-energy goods (Sharma, 2018). Furthermore, handcrafted objects can elicit a degree of affection and attachment from the customer that mass-produced items do not.

- ❖ ***Speed:*** Fast fashion is currently the most common mode of production and consumption in the fashion industry, and it has resulted in a number of sustainability issues (Black, 2011). Fast fashion focuses on getting fashion trends to customers as quickly as possible while minimizing the social and environmental effects of the manufacturing process

(Gwilt, 2014). Since this fashion system model is fundamentally unsustainable, many sustainable designers have taken a new approach to clothing production and consumption (Black, 2011). Slow fashion deviates from the principles and objectives of quick (growth-oriented) fashion (Fletcher & Grose, 2012). Slow fashion seeks to raise awareness of the effect of decisions taken in the fashion industry's design, manufacturing, and consumption processes. Slow fashion takes many forms, but the overarching concern for a product's entire lifecycle and its effect on resources, employees, societies, and ecosystems is inherent in this fashion trend (Black, 2011; Fletcher & Grose, 2012). Small-scale manufacturing, conventional art methods, and the use of local materials and markets are all examples of slow fashion initiatives (Fletcher & Grose, 2012).

2.7.3 Distribution

Another important issue to consider in terms of sustainability is distribution. As goods travel from manufacturing plants to retail outlets, then to customers' homes, the apparel industry is a global operation, and product shipping and retailing can have a direct effect on sustainability.

- ❖ **Logistics:** There are several methods for transporting goods from one location to another. Some modes of transportation, such as air and bus, have a greater environmental effect than others, including train and sea (Fletcher & Grose, 2012). A designer must be aware of the environmental effects of even the simplest decisions, such as product shipping methods. Making thoughtful choices, such as buying from a local business rather than an offshore company, can have significant long-term environmental benefits (Gwilt, 2014). Carbon footprint analysis is one way of determining the environmental effects of distribution methods. This is a method that aims to “assist industries in capturing environmental inputs and outputs through entire

value chains, from raw material supply to product usage and disposal, as well as identifying sources of wasted energy” (Fletcher & Grose, 2012, p. 55). This tool aids businesses of identifying the flaws in their delivery processes and thoroughly comprehending the environmental consequences of their decisions. Companies may use this data to make more educated decisions about distribution methods.

- ❖ **Retail:** There are many ways to improve the existing retail structure to help the fashion industry achieve more sustainable growth. Increased market awareness, streamlining the retail system, and designing a new retail model are three sustainability-minded ideas highlighted in this section for changing the existing retail system. The idea of eco-labels arose from a desire to better educate buyers about the impact of their purchases and to assist in the explanation of attributes of a garment that would otherwise be unfamiliar to them (Aakko & Koskennurmi-Sivonen, 2013). These labels were created specifically for sustainable fashion to make the sustainability efforts at work during the design and creation of a garment more readily understandable. Eco-labels could help differentiate sustainable fashion products from other fashion products that don't inherently look different. The development of a consistent system of labeling would be one prerequisite needed to help determine the legitimacy of eco-labelling. Consumers and businesses alike must consider the ramifications of the eco-labelling scheme in an industry where terms like 'environmentally friendly,' 'green,' and 'sustainable' are used without a clear description of their significance (Black, 2011). Lean retailing is one form of sustainable retailing. “High-tech information collectors, such as Radio Frequency Identification (RFID) tags, are put on every product, and analytical systems are used to maximize the flow of garments through the supply chain,” according to this retail strategy (Fletcher & Grose, 2012, p. 54). By better informing suppliers and retailers about customer

behaviour inside a store, these innovations help to minimize excess inventory and productivity (Fletcher & Grose, 2012). Overall, the aim of this retailing approach is to streamline the retail process and reduce wasteful production. Leasing is an example of a way to reform the retail system and improve the fashion industry's sustainability. Leasing is a method designed to cater to a customer's need for the most up-to-date designs and fashionable clothing. A customer can rent a garment for a set period of time rather than buying a garment to hold in a leasing scheme. In other words, “rather than the material object itself, a buyer may buy a fashion garment's usefulness or the results it provides (fashionability, comfort, security, etc)” (Fletcher & Grose, 2012, p. 102). This device is a great way to increase clothing use intensity while still offering simple maintenance and a never-ending variety of garments for the buyer (Aakko & Koskennurmi-Sivonen, 2013). The ability of the leasing company to determine what happens to the garments when they are no longer suitable for leasing has a significant sustainability benefit. The leasing company will simplify the process of recycling, repurposing, or disposing of the fashion item in a sustainable manner.

2.7.4 Utilization

Designers' decisions can have an impact on how people wear and care for their clothes, particularly if they design with the customer in mind. Consumers' relationships with their garments have been improved by design techniques, with the aim of extending the life of a garment.

- ❖ ***Consumer-Product Relationship:*** *Design for adaptability* is a design technique for creating a product that could be used in a variety of ways and offers the wearer various items or product types in a single garment (Gwilt, 2014). To maximize market use and

garment longevity, this design strategy focuses on the utility and multi-functional properties of clothing.

❖ ***Design for empathy*** is a design technique that considers “what significance the garment holds, how it is used, and the wearer's conduct, lifestyle, wishes, and personal values” (Fletcher & Grose, 2012, p. 85). This design strategy focuses on the relationship formed between the wearer and the garment through aesthetic attraction, utility, and emotional connection. Co-design is another common design method. Co-design is a design strategy in which the designer and wearer collaborate to produce a tailored garment that fits the wearer's needs (Gwilt, 2014). The idea behind this design strategy is that if a buyer participates in the design of their personal garment, they will have a stronger attachment to it and will own it for a longer period of time (Aakko & Koskennurmi-Sivonen, 2013).

❖ ***Laundering***: It has already been found that constant washing of a textile can consume more energy than the product lifecycle phases of design, manufacturing, and distribution (Aakko & Koskennurmi-Sivonen, 2013). Furthermore, proper care is necessary for maintaining an apparel product's fabric properties and longevity, which can result in a longer garment lifespan (Aakko & Koskennurmi-Sivonen, 2013). It is ultimately the consumer's duty to follow sustainable care practices, but a designer can assist in this process. Design for low laundering is a technique in which designers understand the innate washing and drying characteristics of the fibers in order to reduce the effect of care processes (Fletcher & Grose, 2012). Choose materials that can be washed at low temperatures and dried quickly as an example (Fletcher & Grose, 2012). Finishes may also be used by designers to reduce the need for washing and drying. Finishes are chemical solutions that are added to the surface of a fabric to aid in low-

impact washing. Stain-repellent coating and antimicrobial finishes are popular finishes (Fletcher & Grose, 2012). Finishes, on the other hand, must be considered for any harmful effects that can occur. Finishes could be counterintuitive if the environmental cost is no better than that of a potential lower laundering effect (Fletcher & Grose, 2012). Another option is to develop special care labels that help warn consumers about the possible consequences of various laundering methods (Fletcher & Grose, 2012). The theory behind these labels is that if consumers realize the consequences of their decisions, they will be more likely to follow best practices.

❖ **Maintenance:** While the current fast-fashion paradigm has rendered it often easier to buy a new garment than to spend time and effort fixing a damaged garment, there are many advantages to repairing and preserving garments. Repairing a garment and extending its useful life conserves energy that would otherwise be used to create a new garment for purchase. Furthermore, the need for a repair service provides opportunities for the creation of local employment (Aakko & Koskennurmi-Sivonen, 2013). Designers may aid in the maintenance process by supplying replacement parts for their goods, providing repair instructions, or providing repair services themselves (Aakko & Koskennurmi-Sivonen, 2013).

2.7.5 End-of-Life

Taking into account what happens to a fabric at the end of its life cycle can have a huge effect on the amount of clothing waste that ends up in landfills each year. Reducing the amount of virgin materials manufactured can also have a major environmental effect through the entire product lifecycle.

- ❖ **Lifecycle:** From cradle to grave Cradle development is a lifecycle approach to sustainable design thinking in which a product is designed to create no waste across its entire lifecycle (Braungart & McDonough, 2002). The overall goal of this design strategy is to consider all stages of a product's lifecycle during the design process and decide how each impacts the other in order to reduce any negative environmental impacts. For example, when choosing fabric for a clothing item, the manufacturer should choose fabrics that are either biological cycle nutrients, such as natural fibers, or industrial cycle nutrients, such as synthetic fibers (Braungart & McDonough, 2002). The combination of the two cycles results in what Braungart and McDonough (2002) refer to as a "monstrous hybrid" that causes problems when trying to reuse the material at the end of its life.
- ❖ **Design for the environment** is a product design strategy aimed at reducing a product's environmental impact based on environmental issues discovered during a lifecycle assessment (Armstrong & LeHew, 2011). A lifecycle assessment is a method of assessing a garment's harmful environmental effects over the course of its life (Gwilt, 2014). The assessment looks at the environmental impacts of water and energy use, pollution, and pollutant emissions (Gwilt, 2014). Although this evaluation is typically conducted after a product has been produced, it helps in identifying environmentally harmful elements of product construction, manufacturing, distribution, use, and disposal that should be changed for future production.
- ❖ **Disposal:** Designers have the ability to influence how a garment is disposed of by making precise design decisions. This section highlights numerous innovative strategies for extending the life of a garment while minimizing waste produced after the initial product life ends. Plan for disassembly, upcycling, reusing, and taking back are examples of these design initiatives.

- ❖ ***Design for Disassembly*** means designing a garment which at the end of its life can be easily disassembled and recycled (Gwilt, 2014). Several design techniques can be used to help with this process. One example is to design for mono-materials, which are fabrics made from just one form of fiber (Black, 2011). Recycling entails reclaiming fibers from pre-existing fabrics (Fletcher & Grose, 2012). Chemical recycling, which is only suitable for synthetic fibers, and mechanical recycling, which is suitable for all fibers, are the two most common types of recycling (Fletcher & Grose, 2012). Since fibres are broken and shortened during the recycling process, mechanical recycling often results in poorer quality or downcycled materials (Fletcher & Grose, 2012). Through holding synthetic fibers, such as polyester, which can maintain its initial quality by chemical recycling, separate from natural fibers, such as cotton, which can only be mechanically recycled but is naturally biodegradable, designers can help to improve the quality of recycled fabrics (Fletcher & Grose, 2012).
- ❖ ***Upcycling, or repurposing***, Downcycling fabrics through mechanical processing is an alternative to recycled clothing. Upcycle design uses reprocessed or waste materials to produce products of equivalent or better quality than the original product from which these materials were produced (Black, 2011). This strategy requires the deconstruction of existing garments, the restoration, the re-cutting and re-stitching of the garment to create a new, unique product (Fletcher & Grose, 2012).
- ❖ ***Reusing*** Garments comprise "setting up a cycle in which unwanted, older or worn clothes are returned to the modes for sorting, redistribution and retail" (Fletcher & Grose, 2012, p. 66). This clothing disposal method is popular among customers who donate clothing to goodwill, the Salvation Army or other retail outlets. The development of a collection system will help promote the reuse, repurpose and recycling of a cloth at the end of its life. This scheme involves the company that

manufactured the product setting up a system to allow customers to return the product once done, instead of donating or discarding the product (Fletcher & Grose, 2012). This scheme permits a corporation to take responsibility for the end-of-life stage of its goods, gives the customer a simple disposal method and makes it easier for a longer product lifecycle.

Fashion designers may be able to increase the sustainability of the entire apparel product life cycle, including garment production, distribution, and consumer action, through their efforts. Design, according to Fletcher & Grose (2012), “is a positive strategy that can build constructive feedback loops, and because of its role as the front end of the manufacturing chain, it can significantly influence subsequent production steps and even avoid impact from happening in the first place” (p. 33). Designers are in a unique role because they can make decisions that have a direct impact on the product's long-term viability.

As a result, the latest design strategies used by sustainable fashion designers have received a lot of attention in the literature (Gwilt, 2014; Fletcher & Grose, 2012; Armstrong & LeHew, 2011). While this is extremely helpful in recognizing the general issue of sustainability and the various design solutions currently in use, there is a need to consider the practicality of these sustainability efforts in the fashion industry. Understanding the current state of sustainability within the fashion industry is needed before work on reshaping or revolutionizing the industry can begin. Sustainable fashion designers in the industry must provide information about how thorough their knowledge of fashion sustainability, where and how they get their data, and what they're doing to put their knowledge to good use

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides the methodological considerations of this study. It outlines and describes the processes used in data collection and analysis and addresses ethical concerns relative to data collection. The chapter also defines the approach adopted and conditions under which the various phases of investigations were conducted. It further illustrates how issues of validity and reliability were addressed.

3.2 Research Design

According to Turner et al. (2017), a research design is the overall strategy for finding answers to the questions being investigated as well as dealing with some of the challenges that might arise during the research phase. According to Chong and Yeo (2015), the type of data, the data collection method, the sampling process, the timetable, and the budget are all determined by the research design. According to Opoku et al. (2016), a good research design aids in aligning the intended approach with the research problems.

Since various research designs aim to address different types of research problems, Van Wyk and Taole (2015) argue that the research design chosen should be based on the essence of the study, its setting, potential limitations, and the study's underlying paradigm. There are several different types of research designs. The descriptive study design was chosen for the study because it is flexible and realistic, identifying current conditions and pointing to recent needs (Dammak, 2015). The aim of this study was to investigate fashion designers' knowledge level in terms of their understanding and awareness of contemporary best practices in sustainable fashion practices in Bolgatanga, Ghana's Upper East Region, using a mixed method approach

because the analysis involved different measurement scales. A quantitative method approach, according to de Kock (2015), is a broad term for when quantitative data collection methods and analysis procedures are used in research design.

3.2.1 Quantitative Paradigm

This paradigm holds that science is defined by empirical analysis, and that all phenomena can indeed be summarised into empirical metrics that define the facts. The quantitative paradigm's ontological implication is that there is only one meaning, which is an objective fact that exists independently of human experience (Brannen, 2017). According to Juggins (2013), the investigator and the investigated are epistemologically distinct entities. As a result, the researcher may study a phenomenon without affecting or being affected by it. A researcher's aim is to quantify and evaluate causal relationships between variables in a work-free environment. Randomization, concealment, highly formal rules, and written or verbally administered questionnaires with a limited series of current and future state are some of the techniques used to ensure these approaches (Arghode, 2012).

3.2.3 Qualitative Paradigm

Contrary to the quantitative research paradigm, the qualitative paradigm is established on interpretivism and constructivism (Creswell 2014). Ontologically, there are different realities or multiple truths based on an individual's construction of reality. Reality is socially constructed and, as a result, continually changing. Epistemologically, there is no access to reality independent of human minds, no external referent by which to equate claims of truth (Lewis & McNaughton Nicholls 2013). The investigator and the object of study are interactively connected so that discoveries are mutually constructed within the circumstances of the situation which fashions the inquiry. According to the paradigm, reality has no existence

prior to the activity of the investigation, and reality ceases to exist if humans no longer focus on it. Qualitative research focuses on process and meaning. Approaches used in qualitative studies comprise an in-depth and focus group interviews and participant observation (Maxwell 2013).

3.3 Population

According to Saunders (2012), the term "population" refers to the whole community of people from which a sample is drawn. The study's target population was all fashion designers in Bolgatanga, Ghana's Upper East Region. The exact number of individuals in the fashion sector in the Upper East Region is unknown however for the purposes of this study it was estimated that there could be a total of about 600 fashion designers in the study area.

3.4 Sampling Technique

Since it is impractical to sample the entire targeted population due to budget and time constraints, sampling cannot be avoided in study, according to Asiamah et al., (2017) and Etikan & Bala, (2017). Saunders et al. (2012) asserted that at least 10% of the population as sample is considered adequate for a social science research. On this basis the purposive sampling technique; a non-probability sampling approach was used to select a total of 120 fashion designers from fashion houses in Bolgatanga in the Upper East Region.

Purposefully choosing a case is a conscious decision made by the researcher; therefore, the researcher determines what information is required and sets out to find people who can and will provide it based on their expertise or experience (Sharma, 2017; Vehovar et al. 2016).

3.5 Data Collection Techniques

Data was gathered from both secondary and primary sources. The questionnaire was used as a research tool to collect primary data for the analysis. Participants were requested to respond to a self-administered questionnaire. A total of 120 questionnaires were distributed to fashion designers in Bolgatanga, Ghana's Upper East Region, for this study.

In addition, interviews were also adopted in the conduct of the study. Also, ten (10) executives of the Upper East Branch of the Tailors and Dressmakers Association of Ghana were purposive selected for a one-on-one interview. According to Creswell (2012), a one-on-one interview is useful for asking sensitive questions and allowing interviewees to ask questions and make comments that go beyond the initial questions. Interviews are thought to have a high response rate because they are scheduled ahead of time, making participants feel obligated to complete the interview. The interviews were conducted using the interview guide as a guide (refer to Appendix B). While the exact sequence and choice of interview questions varied depending on the responses of individual respondents, the interviews generally followed the guide's structure.

3.6 Reliability and Validity

3.5.1 Reliability

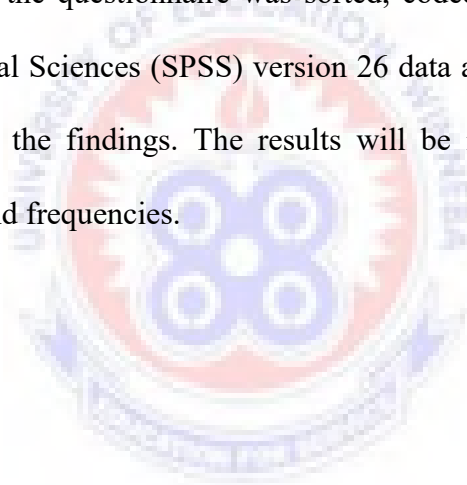
The degree to which the measurements used will produce acceptable results since they are error-free is referred to as reliability. Cronbach alpha was used to determine the variables' reliability in this analysis. Cronbach's alphas for the sub-scales ranged from 0.690 to 0.925, according to Leung (2015), indicating appropriate internal consistency and reliability measures for the questionnaire, implying that if the results surpass the minimum alpha of 0.690, the constructs measures are considered accurate.

3.5.2 Validity

Validity refers to a degree of consistency between the original research idea and the actual idea after receiving the findings. The definition of validity, according to Heale and Twycross (2015), determines if the study results are really about what they appear to be about and examines the relationship between variables. A pre-test was sent to five respondents to see if the questionnaire contained anything difficult to read, and a pilot test was used to ensure validity.

3.7 Data Analysis

The data collected through the questionnaire was sorted, coded, and analyzed using IBM's Statistical Package for Social Sciences (SPSS) version 26 data analysis software. Tables and graphs were used to show the findings. The results will be interpreted using descriptive methods like percentages and frequencies.



CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

The prime determination of this study is to explore fashion designers' knowledge level; including their understanding and awareness of the contemporary best practices in sustainable fashion practices in Bolgatanga in the Upper East Region of Ghana. This chapter presents the results and discussions of the findings of the study. A total of 120 sets of self-administered questionnaires were distributed to fashion designers in the Upper East Region. From the 120 a total of 104 questionnaires were returned representing approximately 87% response rate.

4.2 Analysis of Questionnaire

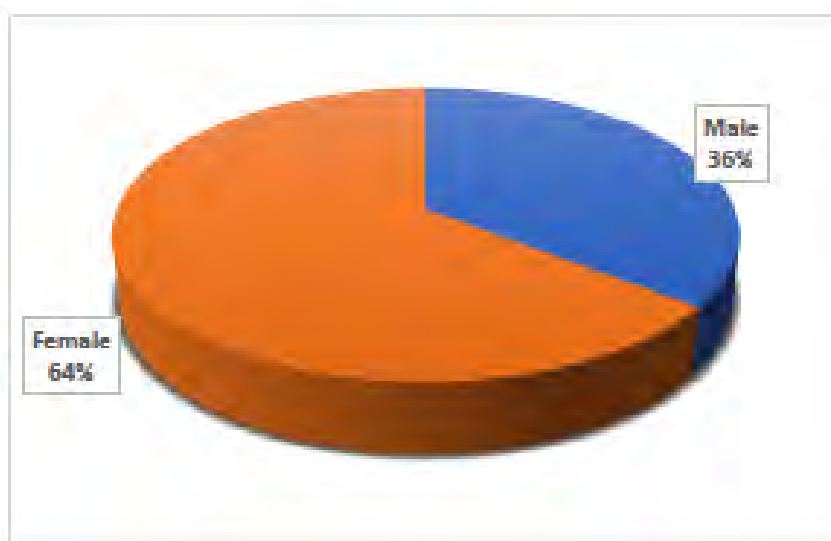


Figure 4.1 Gender distribution of respondents

Source: Fieldwork 2020

Figure 4.1 presents the gender distribution of the respondents used for the study. Summary of the responses gives the impression that the majority of the respondents 64% were female with

the remaining 36% being male. The results support the underlying notion that females mainly dominate fashion.

Table 4.1 Age distribution of respondents

<i>Age range</i>	<i>Frequency(n)</i>	<i>Valid Percent (%)</i>
< 20 yrs.	2	1.9
21 - 30 yrs.	16	15.4
31 - 40 yrs.	33	31.7
41 - 50 yrs.	24	23.1
> 50 yrs.	29	27.9
Total	104	100.0

Source: Fieldwork (2020)

Table 4.1 shows the age distribution of the respondents who participated in the study. From a total of 104 respondents, 33, representing 31.7% were within the 31 – 40 age range, 29 representing 27.9% were above 50 years. Furthermore, 24 participants representing 23.1% were between 41 – 50 years, 16 representing 15.4% were between 21 – 30 years, with only two representing 1.9% being below 20 years. The result suggests that most of the respondents were old enough to contribute meaningfully to the study.

Table 4.2 Educational Qualification of the respondents

<i>Qualification</i>	<i>Frequency(n)</i>	<i>Valid Percent (%)</i>
Basic education	18	17.3
Secondary education	32	30.8
Diploma	46	44.2
Bachelor's degree	5	4.8
Masters	3	2.9
Total	104	100.0

Source: Fieldwork (2020)

From Table 4.2, it could be observed that 46 respondents representing 44.2% were Diploma certificate holders. More so, 32 representing 30.8% had Secondary education, 18 comprising

17.3% were Basic school leavers education, five representing 4.8% had Bachelor's Degree with three representing 2.9% possessing a Master's Degree. From the analysis of the responses, it could be concluded that the majority of the respondents had attained sufficient education. This puts them in a good position to regarded worthy contributors to the conduct of the study.

Table 4.3 Current status of sustainability in the fashion industry

<i>Statements</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>±SD</i>
The fashion industry faces an enormous set of problems linked through design, education, environmental, business and social practices	104	1	5	2.35	1.012
The pace of improvement in sustainability is slowing down, while the industry as a whole is growing	104	1	4	2.84	.986
Fashion companies are not changing their ways fast enough to counterbalance the devastating environmental impacts that come with growing so quickly as an industry	104	1	5	2.59	.601
Fashion companies have not even begun to take sustainability seriously	104	1	5	2.14	1.310
Both the textile and clothing lifecycles consume more energy and water than the product lifecycles of any other industry	104	1	5	3.52	1.079
The significant impact of fashion is not only a result of industry actions but of consumer action, as well.	104	2	5	4.54	.749
Composite scores	104			3.00	0.956

Source: Fieldwork (2020)

The respondents were requested to give their ratings or assessment of the current state of sustainability in the fashion industry. Table 4.3 shows the descriptive statistics of respondents' views on the current status of sustainability in the fashion industry. This was measured on the scale of 1-not at all, 2- small extent, 3-moderate extent, 4-large extent and 5- very large extent.

From the table majority of the respondents agreed to a moderate extent the following; that the fashion industry faces an enormous set of problems linked through design, education, environmental, business and social practices (M=2.35, ±SD=1.012), the pace of improvement

in sustainability is slowing down, while the industry as a whole is growing ($M=2.84$, $\pm SD=0.986$), fashion firms are not changing their ways rapidly enough to offset the catastrophic environmental consequences of the industry's rapid growth. ($M=2.59$, $\pm SD=.601$) and fashion companies have not even begun to take sustainability seriously ($M=2.14$, $\pm SD=1.310$). However, the majority of respondents accepted that apparel and clothing lifecycles use more energy and water than product lifecycles in any other sector ($M=3.52$, $SD=1.079$), and that fashion has a substantial effect not only on industry but also on consumers ($M=4.54$, $SD=0.749$).

From the responses it could be concluded that to a small extent the fashion industry faces an enormous set of problems linked through design, education, environmental, business and social practices, while the industry as a whole is expanding, the rate of change in sustainability is slowing. Fashion companies are not adapting their ways rapidly enough to offset the destructive environmental effects that come with such rapid growth, and fashion companies have not yet begun to take sustainability seriously.

However, the results conclude that to a large extent both the Textile and clothing lifecycles use more energy and water than any other industry's product lifecycles, and fashion's major effect is a function of both industry and customer behaviour.

Source of Sustainability Knowledge

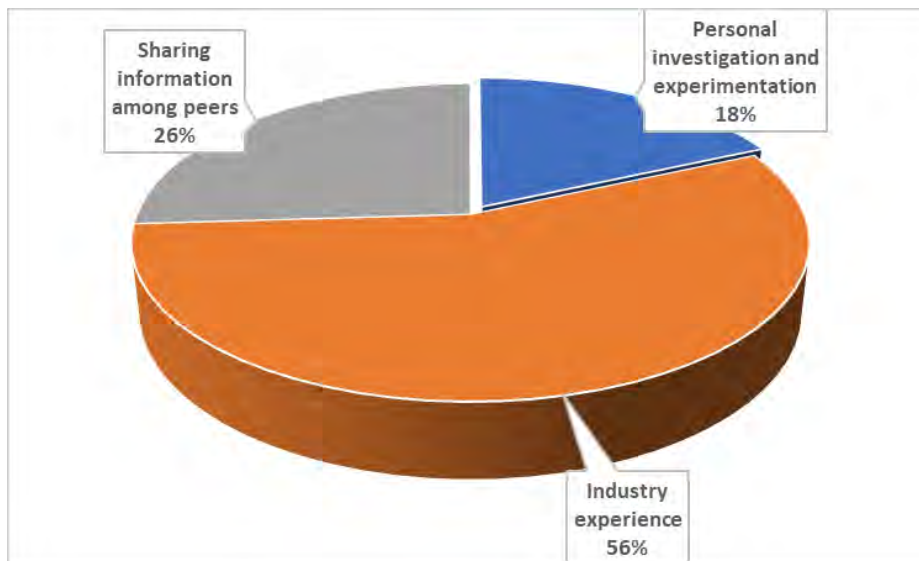


Figure 4.2 Respondent's source of knowledge on sustainability

Source: Fieldwork (2020)

Figure 4.2 gives the results on respondent's sources of knowledge on sustainability in fashion. The results show that more than half (56%) of the respondents acquire their knowledge concerning the subject matter through industry experience whereas 26% of the respondents also obtained theirs by way of sharing information among peers. That notwithstanding, those that acquired their through personal investigation and experimentation were 18% of the total respondents surveyed. From the responses, it can be concluded that most of the fashion designers acquire their knowledge, particularly on sustainable fashion design is through industrial experiences.

Table 4.4 Factors that shape and influence people's willingness to implement sustainability within design practices

<i>Statement</i>	<i>N</i>	<i>Min.</i>	<i>Max.</i>	<i>Mean</i>	<i>±SD</i>
High quality/durable	104	1	5	2.35	1.506
No hazardous chemicals used/pollution-free in the production process	104	1	5	3.43	1.333
Use of recycled materials	104	3	5	4.01	.770
Adoption of resource-saving technique/technology in the production process	104	1	5	4.03	.864
Use of biodegradable materials	104	1	5	4.37	.860
Low-impact care	104	1	5	4.32	.804
Use of organic materials	104	3	5	4.37	.711
Minimised logistics/Good supply chain practice	104	1	5	4.16	.871
Take-back programme	104	1	5	4.35	.943
Repair services	104	2	5	4.15	.760
Resale	104	1	5	4.16	.765
Valid N (listwise)	104				

Source: Fieldwork (2020)

Table 4.4 depicts respondents' views on the factors that shaped and influenced their willingness to implement sustainability within their designs design practices. This was measured on the scale of 1-not at all, 2- small extent, 3-moderate extent, 4-large extent and 5- very large extent. From the table, the majority agreed to a large extent that factors such as the use of recycled materials (M=4.01, ±SD=.770), adoption of resource-saving techniques/technology in production (M=4.03, ±SD=.864), use of biodegradable materials (M=4.37, ±SD=.860), low impact care (M=4.32, ±SD=.804) and use of organic materials (M=4.37, ±SD=.711) shaped and influenced their willingness to implement sustainability within their designs design practices.

Moreover, the majority also agreed to a large extent that minimized logistics/good supply chain practice (M=4.16, ±SD=.871), take-back programme (M=4.35, ±SD=.943), repair services (M=4.15, ±SD=.760) and resale (M=4.16, ±SD=.765) also influenced their willingness to

implement sustainability within their designs design practices. However, the majority also agreed to a small and moderate extent high quality/durable materials ($M=2.35$, $\pm SD=1.506$) and no hazardous chemicals used/pollution-free in the production process ($M=3.43$, $\pm SD=1.333$).

It can be deduced from the above discussions that recycling, adoption of resource-saving production processes, use of biodegradable materials, use of organic materials, repair services, minimized logistics/good supply chain practice among others shaped and influenced your willingness to implement sustainability within your design practices.

Table 4.5 Descriptive statistics on Preproduction: Fashion Design and Utilization

<i>Statements</i>	<i>N</i>	<i>Min.</i>	<i>Max.</i>	<i>Mean</i>	<i>±SD</i>
Utilizing sustainable fabrics	104	1	5	4.17	.794
Sourcing the most sustainably conscious materials possible	104	2	5	4.27	.766
Concentrating on how the fiber was grown and produced	104	1	5	4.04	.917
Concentrating on how fabric was dyed/printed (using natural dyes)	104	2	5	4.20	.856
Valid N (listwise)	102				

Source: Fieldwork (2020)

Table 4.5 shows respondents' views on the preproduction as a fashion design and utilization process. The data was gathered on the five-point liker scale of 1-strongly disagree, 2-disagree, 3-not sure, 4-agree, 5-strongly agree. From the table majority agreed that utilizing sustainable fabrics ($M=4.17$, $\pm SD=.794$), sourcing the most sustainability-conscious materials possible ($M=4.27$, $\pm SD=.766$), concentrating on how the fiber was grown and produced ($M=4.04$, $\pm SD=.917$) and concentrating on how fabric was dyed/printed (using natural dyes) ($M=4.20$, $\pm SD=.856$) is the preproduction processes followed by the firms.

This suggests that most firms implement strict preproduction processes during production which basically involves utilizing sustainable fabrics, sourcing the most sustainably conscious materials possible, concentrating on how the fibre was grown and produced and also concentrating on how fabric was dyed/printed using natural dyes.

Table 4.6 Descriptive statistics on Production activities

Statement	N	Min	Max	Mean	±SD
Construction techniques, supply chain management, and speed of production.	104	3	5	4.41	.601
Waste reduction, specifically focusing on zero-waste patternmaking,	104	2	5	4.30	.774
Utilizing fabric scraps	104	2	5	4.27	.782
Lean production methods	104	1	5	4.22	.870
Reducing unnecessary waste in the workshop	104	1	5	4.35	.833
Valid N (listwise)	104				

Source: Fieldwork (2020)

Table 4.6 shows respondents' views on production as a fashion design and utilization process. The data was gathered on the five-point liker scale of 1-strongly disagree, 2-disagree, 3-not sure, 4-agree, 5-strongly agree. From the table majority of the respondents agreed to construction techniques, supply chain management, and speed of production (M=4.41, ±SD=.601), waste reduction, specifically focusing on zero-waste patternmaking (M=4.30, ±SD=.774), and utilization of fabric scraps (M=4.27, ±SD=.782) are production processes utilized by firms. Moreover, the majority also agreed to lean production methods (M=4.22, ±SD=.870) and reducing unnecessary waste in the workshop (M=4.35, ±SD=.833).

The views expressed by the respondents suggest that firms adhered to Construction techniques, supply chain management, and speed of production, waste reduction, utilization of scraps and waste management during production.

Table 4.7 Descriptive statistics on post-production activities

<i>Statement</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>±SD</i>
Limiting waste through sustainably conscious product packaging	104	1	5	3.99	.846
Strategic retail methods (producing everything only to order)	104	3	5	4.27	.660
Valid N (listwise)	104				

Source: Fieldwork (2020)

Table 4.7 shows respondents' views on the post-production strategies utilized by firms during product and utilization. The data was gathered on the five-point liker scale of 1-strongly disagree, 2-disagree, 3-not sure, 4-agree, 5-strongly agree. Majority of the respondents agreed to limit waste through sustainably conscious product packaging (M=3.99, \pm SD=.846) and strategic retail methods (producing everything only to order) (M=4.27, \pm SD=.660). This implies that the firms adhere to strict post-production processes like limiting waste and using strategic retail methods such as producing everything only to order

Table 4.8 Descriptive statistics on utilization

<i>Statements</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>±SD</i>
Extending the life of my products (garments) through quality construction	104	1	5	4.23	.791
Creating high quality, long lasting garments	104	1	5	4.25	.773
Extending the life of my products (garments) through good and versatile designs	104	1	5	4.35	.747
Reducing the environmental impact of garment care through consumer education	104	1	5	3.50	1.481
Valid N (listwise)	104				

Source: Fieldwork (2020)

Table 4.8 shows respondents' views on the utilization strategies used by firms during product and utilization. The data was gathered on the five-point liker scale of 1-strongly disagree, 2-disagree, 3-not sure, 4-agree, 5-strongly agree. From the table majority of the respondents agreed to products life extension (M=4.23, \pm SD=.791), creating of high quality and long-lasting garments (M=4.25, \pm SD=.773), an extension of product life through good and versatile

designs ($M=4.35$, $\pm SD=.747$) and reduction of the environmental impact of the garment through consumer education ($M=3.50$, $\pm SD=1.481$). It can be deduced that most of the firms stressed on product lifespan extension and reduction of the environmental impact of the garment industry.

Table 4.9 Descriptive statistics on End of Life

<i>Statements</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>±SD</i>
I make design decisions that enable my products (garments) to be reused and remade into new items	104	1	5	3.62	1.264
I am aware of some end-of-life strategies, such as the cradle-to-cradle approach and apparel take back schemes	104	1	5	3.59	1.282
Valid N (listwise)	104				

Source: Fieldwork (2020)

In terms of product design and use, the majority of respondents agreed that they make design choices that enable my goods (garments) to be reused and remade into new pieces ($M=3.62$, $\pm SD=1.264$) and that they are aware of certain end-of-life strategies, such as the cradle-to-cradle strategy and clothing take back schemes ($M=3.59$, $\pm SD=1.282$). It can be agreed that the majority of respondents place a premium on product reuse and support certain end-of-life strategies, such as the cradle-to-cradle strategy and clothing take-back programs.

Table 4.10 Descriptive statistics on promoting sustainable fashion

<i>Statements</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>±SD</i>
Designers must focus on eco/organic or recycled fabric.	189	1	5	3.64	1.004
Use fabrics and other materials that can either become fully biodegradable or recycled	189	1	5	3.94	.932
Use of materials that reduce environmental impacts by either being biodegradable or continually recyclable	189	1	5	3.67	1.082
Use longer-lasting products to reduce physical and environmental impacts	189	1	5	3.68	1.050
Educate consumers to enable them to make better-informed decisions when purchasing and caring for fashion products	189	1	5	3.68	1.378
Consider consumer needs, and lifestyle since the success of a sustainability initiative is often reliant on consumer action after purchase of a garment	189	1	5	3.75	1.019
Upcycling or reusing of unwanted and discarded materials (e.g. fabric scraps) into new products without compromising the value and the quality of the used material	189	1	5	3.57	.985

Source: Fieldwork (2020)

The descriptive statistics of respondents' opinions on ways to promote sustainability in the fashion industry are shown in Table 4.10. On a five-point Likert scale, 1-strongly disagree, 2-disagree, 3-not sure, 4-agree, 5-strongly agree, this was analysed.

From the table majority of the respondents agreed that Designers must focus on eco/organic or recycled fabric ($M=3.64$, $\pm SD=1.004$), use fabrics and other materials that can either become fully biodegradable or recycled ($M=3.94$, $\pm SD=1.082$), and use of materials that reduce environmental impacts by either being biodegradable or continually recyclable ($M=3.67$, $\pm SD=1.050$).

Despite this, the majority of respondents ($M=3.68$, $SD=1.050$) agreed that using longer-lasting goods would minimize physical and environmental impacts. Consider consumer needs and lifestyle because the success of a sustainability initiative is always reliant on consumer action

after the purchase of a garment (M=3.75, SD=1.019) and upcycling or reusing of unwanted and discarded materials (e.g., fabric scraps) into new products (M=3.68, SD=1.378).

This means that designers must focus on eco/organic or recycled fabric, use fabrics and other materials that can be completely biodegradable or recycled, use materials that reduce environmental impacts by being biodegradable or continuously recyclable, and use longer-lasting products to repurpose.

Furthermore, industry stakeholders should understand customer preferences and lifestyles, as the effectiveness of a sustainability campaign is always dependent on consumer action after the purchase of a garment, and upcycle or reuse unwanted and discarded materials (e.g. fabric scraps) into new goods without sacrificing the value and quality of the used material.

4.3 Interview Results

4.3.1 Sustainability Awareness among fashion house owners

While the fashion owners' educational backgrounds varied significantly, it was obvious that most of their knowledge of sustainability was obtained through the education system, and this was quite prominent among the owners. Additionally, a significant number of respondents indicated they learned of sustainability through their practices. Selected responses have been provided below;

“I think I learned a lot about it when I was doing my first degree and it kind of really hit me I have been practising most of the sustainability practices unconsciously...”

“...it was really a lot of hands-on going to the fabric mills in Ghana, talking to the vendors, and then doing research online that didn't really exist, a lot of it—so it was just trial and error and seeing where I could get information.”

“I think really; my knowledge came from working in the corporate world, where you really see the deleteriousness of the fashion industry in terms of the environment and also human rights.”

From the responses, it could be concluded that most of the industry players got conscious of the concept of sustainability through their education as well as industry practices. Some of the owners have had prior experiences working in the corporate environment where issues with the environment are taken really seriously.

4.3.2 Sustainability practices and considerations

The respondents were asked to indicate how they practice their sustainability protocols in their various fashion houses. Analysis of the responses revealed that from the fashion house owners, past experience of reducing waste was prominent in their responses. To them, to make the environment safe and sustainable, their understanding is to reduce waste as much as possible. Other section also noted that they are more focused on reuse or recycling of the waste generated. Selected comments have been provided below;

“Oh, normally, I try to reduce the waste that comes out of the sewing process. You know during cutting and other things you generate a lot of waste mainly cut fabric...”

“I try to exercise the practice through reuse of the waste fabric. One thing that is certain is that there is no way you can produce a garment without generating some significant amount of waste; hence I focus my attention on reusing the waste that is generated throughout the process. For example, we know fabrics that are cotton, on the other hand, can only be down-cycled into a lower-quality product, when 100 percent polyester can be recycled and reprocessed into a brand new, high-quality clothing product? Yes! So that is what I try to do here...”

“I focus on the output of the entire process. I always want to make sure that the best materials are used for the production, and in so doing, I get to know that the process will give me quality products. The implication is that the quality material is durable hence will be used for a very long time lowering its long-term impact on the environment...”

From the responses, it can be concluded that respondents ensure they practice sustainable practices in their business was by waste reduction and recycling of waste.

4.3.3 Considerations regarding sustainability practices

The respondents were further asked to indicate factors that considered in their decisions to practise sustainability in their business operations. Right through the responses, it was clear that most of them do not actually have sustainability practices as a corporate mission but rather just a mere practical consideration into the production process. The respondents, however, indicated their willingness to implement sustainability practices simply as a trend in garment design. Selected excerpts have been given below;

“oh am not really fixated or hooked onto this thing; it's just a trend that's how I see it. The waste reduction and recycling campaigns ongoing it's new advocacy which will either come to stay or leave us with time...”

“Normally, it is really not my initial intention to be producing in this manner. I was fascinated by the concept and had just bought into it, and for me, it helps protect the environment in one way or the other. Help keeps us all safe...”

From the responses, it can be concluded that respondents out of their own will have decided to introduce sustainability into their processes. Also, it has been established that a section of the stakeholders in the fashion industry does consider sustainability as a trend which will either stay with us or go away after some time.

4.3.4 Role of consumers in the sustainable development of fashion

The respondents were asked about what they think about consumer's views on sustainable development in the fashion industry. The responses suggest that most of the respondents believe that consumers, especially consumers of related fashion products, do not practically take sustainability into consideration in their consumption decisions. Selected remarks have been outlined below;

“am not sure a lot of them are even aware of what is going on. They do not know because the advocacy towards the concept is low here people just get their fabric to bring to you to sew. I can tell you sustainability is perhaps

absent from the factors they consider when they want to purchase garments...”

“Am not sure they really give a thought about that. Consumption of fashion products is just a straitjacket thing. People see nice fabric they buy straight away. Sometimes it is for an organized event, and they want to participate, so they buy the cloth earmarked for the event, and off they go.... so, for sustainability I doubt...”

From the responses, it could be concluded that the fashion house owners perceive consumers as not being conscious of the concept of sustainability. To the respondent’s consumers rarely factor concerns relative to the impact of their purchase decisions on the environment. It was their belief that consumers normally buy particular fabrics or garments based on factors other than sustainability.

4.3.5 Impact of products on the local community

Respondents were asked to indicate what they think is the impact of their production activities on the local community. The responses show that respondents have a positive evaluation of their production activities and their impact on the local community. They were of the firm belief ones they contribute by paying money for their waste to be collected properly by authorities it goes a long way to ensure that their waste is handled properly to reduce their carbon footprints on the environment. Comments to that effect have been given below;

“We are very careful about how we dispose off our waste for that I can assure you. At first, we used to burn them in the open, but we got to realize it has far more consequences on the environment than we imagined, so we stopped. I always tell my kids here not to burn them rather keep them till the collectors come around to collect them...”

“I make a monthly payment for the refuse from the shop to be collected. I make the payments at the end of the month, but the collectors come twice in the month. Yes! That is my contribution to ensuring that wastes are properly managed so as not to harm the environment. You know we do not

make the fabric those are made by the textile manufacturing companies, but we make the garments hence we try as much as possible to have our waste properly managed and by far it helps the community too because sometimes you find cut fabrics in gutters which leads to flooding when it rains...”

From the responses, it is quite obvious that the respondent's attitude towards waste management in a long way goes to impact the community relative to waste management. The respondents put their efforts into ensuring that the waste that is generated from their shops are properly managed. This is to reduce their effects on the environment. Moreover, this helps in the effective management of waste in their respective communities.

4.4.6 Educating consumers on sustainable practices

The respondents were also asked whether they educate their consumers on sustainable practices. The responses show that there is little effort on this front from the owners of the fashion houses. The results also suggest that much education rather goes to the apprentices learning the trade in their respective shops. Selected comments have been outlined below;

“I do not normally talk to a client on sustainability issues like you have explained to me, but I think I do that more with my apprentices especially the choice of fabric for what purpose and also how best to manage the waste that comes from our shop...”

“I do but not with all my clients I think I normally talk to those who are close to me that usually get to spend some time with me apart from that no one else...”

“Ah! Not at all they just come here take their measurement and hands over the fabric to us we sew, and when it is done we call them to come to get it that ends it...”

From the responses, it can be concluded that most fashion houses are impacting the local communities through their investments into the proper management of waste that is generated as part of their activities.

4.4 Conclusions of interview results

The interviews showed that most of the industry players became conscious of the concept of sustainability through their education as well as industry practices. Some of the owners have had prior experiences working in the corporate environment where issues with the environment are taken really seriously. Additionally, the results conclude that respondents ensure they practice sustainable practices in their business was by waste reduction and recycling of waste.

Furthermore, the interview results conclude that out of their own willingness fashion house owners decided to introduce sustainability into their business operations. Also, it has been established that a section of the stakeholders in the fashion industry does consider sustainability as a trend which will either stay with us or go away after some time.

From the responses, it could be concluded that the fashion house owners perceive consumers as not being conscious of the concept of sustainability. To the fashion owners' consumers rarely factor concerns relative to the impact of their purchase decisions on the environment and that consumers normally buy particular fabrics or garments based on factors other than sustainability.

More so, attitude towards waste management in a long way goes to impact the community relative to waste management. Fashion houses invest their efforts in ensuring that the waste that is generated from their shops are properly managed. Furthermore, this helps in the effective management of waste in their respective communities, thereby impacting the local communities better through their efforts into the proper management of waste that is generated as part of their activities.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This section of the study summarizes the outcomes and details the conclusions garnered from the investigations conducted. The summary of the findings is presented relative to the objectives of the study. Conclusions are further drawn from the research and recommendations made. Proposals for future/further research are further provided as well.

5.2 Summary of findings

The study discovered that stakeholders in the fashion industry agreed that the improvement in sustainability in the industry has slowed down. While the fashion industry as a whole is growing, fashion companies are not changing their ways quickly enough to offset the damaging environmental impacts that come with such rapid growth, and fashion companies have yet to take sustainability seriously.

However, the study discovered that, to a large degree, both the apparel and clothing lifecycles use more energy and water than any other industry's commodity lifecycles, implying that the major influence of fashion is a function of both industry and consumer intervention. It was found that most of the fashion designers acquire their knowledge, particularly on sustainable fashion design is through industrial experiences.

The study further found out that recycling, resource-saving production processes, use of biodegradable materials, use of organic materials, repair services, minimized logistics/good supply chain practice among others shape and influence people's willingness to implement sustainability within their design practices. Addition, the study noted that most firms implement strict preproduction processes during production which basically involves utilizing sustainable fabrics, sourcing the most sustainably conscious materials possible, concentrating

on how the fibre was grown and produced and also concentrating on how fabric was dyed/printed using natural dyes.

The study also found out that respondents suggest that firms adhered to construction techniques, supply chain management, and speed of production, waste reduction, utilization of scraps and waste management during production. It was implied that the firms adhere to strict post-production processes like limiting waste and using strategic retail methods such as producing everything only to order. The study again discovered that the fashion houses in the study area stress on product reuse and are most definitely of some end-of-life strategies, such as the cradle-to-cradle approach and apparel take-back schemes.

This implies that the basic pillars needed to promote sustainability in the fashion industry included the need for designers to focus on eco/organic or recycled fabric, use fabrics and other materials that can either become completely biodegradable or recycled, use Materials that reduce environmental impact by being biodegradable or constantly recyclable, and the use of longer-lasting goods for repurposing.

Furthermore, the study identified that the effectiveness of a sustainability campaign is reliant on customer needs, lifestyle, and is also reliant on consumer behavior after the purchase of a garment, as well as upcycle or reuse unwanted and discarded materials (e.g. fabric scraps) into new goods without losing the value and quality of the used material. Furthermore, the study discovered that the majority of fashion house owners show sustainable practices in their business by waste reduction and waste recycling, and that their decision to incorporate sustainability into their processes was motivated by their own willingness. Furthermore, it has been identified that a segment of the fashion industry's stakeholders sees sustainability as a movement that will either stick around or fade away after a while.

5.3 Conclusions

According to the study's results, progress toward greater sustainability in the apparel industry has slowed. Furthermore, as the industry as a whole grows, fashion companies are not adapting their ways rapidly enough to offset the destructive environmental impacts that come with such rapid growth, and fashion companies have not yet begun to take sustainability seriously.

Furthermore, the study concluded that both the apparel and clothing lifecycles use more energy and water than the commodity lifecycles of any other sector, implying that the major influence of fashion is a function of both industry and consumer intervention. In addition, fashion designers gain knowledge, especially about sustainable fashion design, through industrial experiences.

It was also determined that recycling, the use of resource-saving manufacturing techniques, the use of biodegradable products, the use of organic materials, repair facilities, and reduced logistics/good supply chain practices, among other things, have a major impact on people's willingness to incorporate sustainability into their design practices.

Furthermore, the study concluded that most firms implement strict preproduction processes during production, which basically involves using sustainable fabrics, sourcing the most sustainably conscious materials possible, focusing on how the fiber was grown and produced, and also focusing on how the fabric was dyed/printed using natural dyes, and that fashion houses or apparel manufacturing focuses on these factors.

The study also concludes that the companies follow strict post-production processes such as reducing waste and using strategic retail tactics such as manufacturing all to order. The study discovered that the fashion houses in the study area place a premium on product reuse and strongly support certain end-of-life initiatives, such as the cradle-to-cradle strategy and clothing take-back programs.

The conclusion about the promotion of sustainability in the fashion industry was the need for designers to focus on eco/organic or recycled fabric, use fabrics and other materials that can either become completely biodegradable or recycled, use materials that reduce environmental impacts by either being biodegradable or continually recyclable, use longer-lasting products to reduce physical and environmental impacts, and use longer-lasting products to reduce physical and environmental impacts.

The study also concludes, based on the results, that there is a need to be dependent on customer needs and lifestyle, which is essentially consumer behavior after purchasing a garment, and also upcycle or reuse of unwanted and discarded materials (e.g. fabric scraps) into new goods without losing the value and quality of the used material.

Furthermore, the study concludes that the majority of fashion house owners show sustainable practices in their business by waste reduction and waste recycling, and that their decision to incorporate sustainability into their processes was motivated by their own willingness. Furthermore, it has been identified that a segment of the fashion industry's stakeholders sees sustainability as a movement that will either stick around or fade away after a while.

5.4 Recommendations

- i. There is a large-scale wave of change in the fashion industry toward sustainability; nevertheless, there are still concerns and issues to be answered, so it is advised that companies take incremental yet carefully holistically considered moves in the right direction to be far more successful.
- ii. The government must pressure stakeholders in the fashion industry, especially fashion houses, to accept responsibility for the waste they generate by instituting an Extended Producer Responsibility scheme for the textile and garment manufacturing industries,

as well as rewarding companies that take positive waste-reduction actions. A per-garment tax on producers could raise millions of dollars for investment in better clothing collection in Ghana. This could result in the creation of new "green" jobs in the sorting industry, especially in areas such as textile and garment recycling.

- iii. Fashion designers and retailers must accept responsibility for the social and environmental costs of their products. They should use their market leverage to push for higher environmental and labor standards. Fixing fashion: fabric use and retailer sustainability expectations Offering rental programs, lifetime repair, and offering more detail to consumers about the source and true cost of clothing are all steps that can be more widely implemented. Shifting business practices in this manner will not only boost a company's environmental and social impact, but also provide a competitive advantage as it responds to customer demand for responsible, sustainable apparel.

5.5 Suggestions for further study

The prime determination of this study was to explore fashion designers' knowledge level; including their understanding and awareness of the contemporary best practices in sustainable fashion practices in Bolgatanga in the Upper East Region of Ghana. Due to limitations beyond the researcher's control, it is implored that upcoming researchers should consider expanding the scope of the study to include other regions in Ghana for a more generalizable result.

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APPENDIX I

QUESTIONNAIRES FOR FASHION DESIGNERS

DESCRIPTION

This study is being conducted as part of my master's thesis. The purpose is to explore fashion designers' knowledge level; including their understanding and awareness of the contemporary best practices in sustainable fashion practices in Bolgatanga in the Upper East Region of Ghana. The researcher thus requests your assistance. Your responses will aid the researcher to develop better concepts for gaining an understanding of designers' knowledge of sustainability and the current practices employed in sustainable fashion design to understand the variables that inspire designers' choices during product design as well as the development process for sustainable fashion.

PARTICIPATION

Your participation in this research is voluntary. You can withdraw anytime from researcher if you so wish. Your participation will involve completing the ensuing survey.

PRIVACY AND CONFIDENTIALITY

All comments, as well as responses, will be treated confidentially. Your name or title is not required in any of the responses. Please note that data gathered from this study may be used as comparative data in future studies or for a publication.

CONSENT TO PARTICIPATE

Submitting the completed survey is assumed to be an indication of your consent to participate in this study. If you have any enquiries, please do not hesitate to request my assistance. You can use a [✓] mark to indicate your responses for items with alternative responses. Please briefly state your responses to the open- ended items.

Thank you for your time

SECTION A: DEMOGRAPHICS

1. Name of the business:
2. Gender: Male [] Female []
3. Age: Below 20 [] 21-30 [] 31-40 [] 41-50 [] 50 & above []
4. Educational qualification: Basic education or equivalent [] Bachelor degree []
Master degree [] Others
(specify).....

SECTION B: CURRENT STATUS OF SUSTAINABILITY IN THE FASHION INDUSTRY IN GHANA

<i>To what extent do you agree with the following the current status of sustainability in the fashion industry?</i>	<i>To a large extent</i> 5	4	3	2	<i>Not at all</i> 1
1. The fashion industry faces an enormous set of problems linked through design, education, environmental, business and social practices					
2. The pace of improvement in sustainability is slowing down, while the industry as a whole is growing					
3. Fashion companies are not changing their ways fast enough to counterbalance the devastating environmental impacts that come with growing so quickly as an industry					
4. Fashion companies have not even begun to take sustainability seriously					
5. Both the textile and clothing lifecycles consume more energy and water than the product lifecycles of any other industry					
6. the significant impact of fashion is not only a result of industry actions but of consumer action, as well.					

Key: 5=*To a very large extent*; 4=*to some extent*; 3=*Not sure*; 2=*to a small extent*; 1=*Not at all*

SECTION C: THE LEVEL OF SUSTAINABILITY KNOWLEDGE OF FASHION DESIGNERS

1. How did you as a designer gain your knowledge of sustainability and sustainable design practices?
2. Through personal investigation and experimentation []
3. Through industry experience []
4. Through sharing information among my peers []
5. What factors shaped and influenced your willingness to implement sustainability within your design practices? _____

<i>Based on your understanding, what are the features that best defines sustainable apparel?</i>	<i>To a very large extent</i> 5	4	3	2	<i>Not at all</i> 1
1. High quality/durable					
2. No hazardous chemicals used/pollution-free in the production process					
3. Use of recycled materials					
4. Adoption of resource-saving technique/technology in the production process					
5. Use of biodegradable materials					
6. Low-impact care					
7. Use of organic materials					
8. Minimized logistics/Good supply chain practice					
9. Take-back programme					
10. Repair services					
11. Resale					

Key: 5=To a very large extent; 4= to some extent; 3=moderate extent; 2= to a small extent; 1=Not at all

SECTION D: - how fashion designers in Bolgatanga in the Upper East Region are utilizing their knowledge of sustainability in their business practice and how they can contribute to change the current paradigm

<i>Designers' Application of Sustainability Knowledge</i>	<i>Strongly Agree</i> 5	4	3	2	<i>Strongly Disagree</i> 1
Preproduction					
1. Utilizing sustainable fabrics					
2. Sourcing the most sustainably conscious materials possible					
3. Concentrating on how the fiber was grown and produced					
4. Concentrating on how fabric was dyed/printed (using natural dyes)					
Production					
1. Construction techniques, supply chain management, and speed of production.					
2. Waste reduction, specifically focusing on zero-waste patternmaking,					
3. Utilizing fabric scraps					
4. Lean production methods					
5. Reducing unnecessary waste in the workshop					
Post Production					
1. Limiting waste through sustainably conscious product packaging					
2. Strategic retail methods (producing everything only to order)					
Utilization Stage					
1. Extending the life of my products (garments) through quality construction					
2. Creating high quality, long lasting garments					
3. Extending the life of my products (garments) through good and versatile designs					
4. Reducing the environmental impact of garment care through consumer education					
End of Life					
1. I make design decisions that enable my products (garments) to be reused and remade into new items					
2. I am aware of some end-of-life strategies, such as the cradle-to-cradle approach and apparel take back schemes					

Key: 1=Strongly Disagree; 2= Disagree; 3=Not sure; 4=Agree; 5=Strongly Agree

<i>To what extent do you agree with the following in terms of the best practices to promote sustainable fashion?</i>	<i>To a large extent</i> 5	4	3	2	<i>Not at all</i> 1
1. Designers must focus on eco/organic or recycled fabric.					
2. Use fabrics and other materials that can either become fully biodegradable or recycled					
3. Use of materials that reduce environmental impacts by either being biodegradable or continually recyclable					
4. Use longer-lasting products to reduce physical and environmental impacts					
5. Educate consumers to enable them to make better-informed decisions when purchasing and caring for fashion products					
6. Consider consumer needs, and lifestyle since the success of a sustainability initiative is often reliant on consumer action after purchase of a garment					
7. Upcycling or reusing of unwanted and discarded materials (e.g. fabric scraps) into new products without compromising the value and the quality of the used material					
8. Fashion designers must understand the key phrases within the lifecycle of a garment, including preproduction, production, distribution, use, and end-of-life					
9. Fashion designers must use the three R's of the Environment: Reduce, Reuse, and Recycle					

THANK YOU

APPENDIX II

INTERVIEW PROTOCOL FOR EXECUTIVES OF THE TAILORS AND DRESSMAKERS ASSOCIATION OF GHANA

Section A: Demography

Interview No.: _____

Date/Time: _____

Gender: _____

Working experience _____

SECTION B:

1. What does sustainability mean to you?
2. How did you get to know what you know about sustainability in the fashion industry?
3. What steps do you consider in your production process?
4. What do your consumers think about sustainable fashion?
5. What role do consumers have in the sustainable development of fashion?
6. How might your products impact the local community where your garments are produced/sold/used?
7. How might your design efforts impact consumer habits?
8. How do you communicate with your consumers?
9. Do you educate your consumers on sustainable practices? Why/Why not?
10. What considerations do you give regarding how your consumers will dispose your garments?
11. Can you describe how your design efforts might influence your consumer to lengthen the lifespan of their garments rather than throwing them away after the first use?