Sustinere
Journal of Environment and Sustainability
Volume 8 Number 1 (2024) 1-15

Print ISSN: 2549-1245 Online ISSN: 2549-1253
Website: https://sustinerejes.com E-mail: sustinere.jes@uinsaid.ac.id

REVIEW

The role of developing countries in the global fashion industry sustainability discourse: Ghana in perspective - A narrative review

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Article history:
Received 16 October 2023 | Accepted 11 March 2024 | Available online 20 May 2024

Abstract. Fashion Industry practices globally are considered to have major negative impacts on both the environment and society. Production and consumption have increasingly moved towards the industry's model of take-create-dispose. As this phenomenon is observed to take center stage in more industrialized and advanced nations, developing countries including Ghana, also contribute directly or indirectly to the negative impacts. Fashion production in Ghana is predominantly centered on small to medium-scale enterprises, and their mode of operation allows for customized small runs tailored to specific end-customers, thereby providing an avenue for exploring sustainable strategies that may have a positive impact on the environment and society. This paper takes a narrative review approach to how the fashion industry in Ghana impacts sustainability and the opportunities to make positive impacts on sustainability at a global level. It demonstrates how Ghana, as a developing country, imports raw materials for both textile and apparel production from counterparts in developing and developed countries and contributes to negative environmental impacts associated with sourcing countries. However, with the emergence of sustainable strategies, local contemporary fashion designers can embrace culturally friendly sustainable models to enhance their practice toward industry sustainability.

Keywords: Internationalisation and industrialisation; Developing countries; Fashion industry; Sustainability; Rethinking opportunities

1. Introduction

Fashion production is known to be highly resource-intensive, with concerning environmental and social impacts. The global fashion industry, driven by 'fast fashion', has contributed to an increased volume of products with shorter life cycles, accompanied by deflation of retail prices (Cachon & Swinney, 2011; McColl & Moore, 2011; Sandvik & Stubbs, 2019). Constant changes in fashion trends stimulate new designs and sales of fashion products that drive consumption and, in turn, contribute their underutilization and waste (Ellen MacArthur Foundation, 2015). Environmental impacts involve all aspects of the fashion business's upstream and downstream supply chains and their transparency, as well as the less controllable elements of clothing use and disposal (Curwen et al., 2013; Egels-Zandén et al., 2015). The complexity and variety of fashion

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DOI: https://doi.org/10.22515/sustinere.jes.v8i1.357

products, necessitate differentiation through design content, responding to market pressures, and working with short lead times, which present particular business challenges, not least operationalizing concepts of sustainability so that they become value-adding propositions (Stål & Jansson, 2017).

However, the traditional model of linear production practiced by the industry globally is at variance with the sustainability goals of the United Nations (UN), which responded to rising concern about environmental degradation by defining sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WECD, 1987). This definition presents a conscious approach to how things are made for current gratification while creating planetary boundaries for future generations (Steffen et al., 2015). To guide global development to 2030, an agreement was reached by the UN on a set of 17 Sustainable Development Goals (SDG) (Environmental Audit Committee, 2019). The most critical of these goals is SDG 12: Responsible Consumption and Production, which demands changing consumption patterns and improving resource productivity and has become a driving factor for sustainable practices in the fashion industry. Asserting that current growth patterns are not just unsustainable, the World Bank (2012) also found that they are deeply inefficient. The global fashion industry is at the forefront of these deficiencies.

Fashion not only needs to manage the use of substantial amounts of materials and energy in production (Armstrong et al., 2015) but also social sustainability through the selection and monitoring of suppliers and their labor practices (Hofstetter et al., 2021; Hoque & Sinkovics, 2016; Turker & Altuntas, 2014). The management frameworks of Corporate Social Responsibility (CSR) (Fernando, 2010) and corporate governance (Hofstetter et al., 2021; Turker & Altuntas, 2014) have been applied to fast fashion and its supply chain sustainability performance. Specifically, the triple bottom line (Elkington, 1998) addresses unsustainable and inefficient growth by providing a measure for the economic, environmental, and social dimensions of sustainability and serves as a foundation for sustainable discourse in the fashion industry (Pedersen et al., 2019). Furthermore, the sustainable dimensions of the triple bottom line are consolidated in the concept of Sustainable Supply Chain Management (SSCM), which integrates them with the management of material, information, and capital flows and cooperation among companies in the supply chain (Li et al., 2014; López et al., 2020; Seuring & Müller, 2008).

The economic aspect of the triple bottom line model turns is vigorously pursued by the fashion industry at the expense of the environment (planet) and the social (people) dimension. However, the sustainability agenda requires businesses to ensure that underlining principles of operations reflect all three dimensions to enhance the growth prospects of the UN development goals. While sustainability and sustainability research may be dominated by highly industrialized nations, less is known about the progress toward meeting environmental and social objectives in developing countries (López et al., 2020). Previous studies have tended to focus on fashion production in Asian countries (Hoque & Sinkovics, 2016; Nayak et al., 2019) sustainability within fashion supply chains (Arrigo, 2020; Karaosman et al., 2017; Köksal & Strähle, 2021). Nevertheless, there is increasing interest in the fashion industries of African countries and the possibilities for future growth. The aim of the paper was to examine the dimensions of fashion production and sustainability, with a focus on Ghana through the exploration of existing literature to identify the gaps and propose areas of research that could aid the adoption of sustainability in fashion production in Ghana.

2. The review

2.1. The internationalisation of trade in clothing and the industrialisation in developing countries

The textile and clothing industry has played a significant role in the industrialisation of many countries including Britain, Japan, and The United States of America (USA) (Goto, 1989). During

the twentieth century, the internationalisation of trade and subsequent industrialisation of textiles and clothing in developing countries was led by the USA, the world's largest market for textiles and clothing (Gereffi & Memedovic, 2003; Kim et al., 2006). The introduction of the General Agreement of Tariff and Trade (GATT) in 1948 led to relatively unrestricted trade in these markets (Ayoki, 2017; Hayashi, 2007). However, the competitiveness of the Japanese textile and clothing industry in the 1950s contributed to a surge in exports of cheaply made clothing and textile products due to the imposition of trade restrictions and quotas (Goto, 1989). The restrictions, including severe constraints imposed on Japan, resulted in relocation of production to Japan's neighbouring countries later known as the four tigers: Hong Kong, Singapore, South Korea, and Taiwan in the 1960s and 70s. A second wave of migration according to Goto (1989), saw production moving to Indonesia, Malaysia, the Philippines, and Thailand in the 1980s and 90s. The third wave turned to the Caribbean countries, Mexico, and significantly China, at the end of the twentieth century, and finally, after 2000, the Sub-Saharan African (SAA) Countries (Goto, 1989). The consequent restructuring of the world's apparel industry has led to developed countries being major importers of apparel produced in developing countries (Ha-Brookshire, 2015).

Influential factors for migration included lower costs and labor shortages (Ha-Brookshire, 2015; Sirilertsuwan et al., 2019). Higher labor costs in developed countries have become a significant factor in the relocation of production in the textile and clothing industry to developing countries (Abecassis-Moedas, 2007; Sirilertsuwan et al., 2019). While developments in technology have enabled higher-cost countries to retain some production capacity, the labour-intensive manufacturing of clothing remains the deciding factor in the shift of garment-making from Asian countries to Africa, thereby fueling industrialisation in Africa. The need to reduce costs and increase supply was facilitated by changes to regulations directed toward the internationalisation of trade in clothing. In the USA, trade regulations resulted in the geographical mobility of textile and apparel production infrastructure to low cost-labour countries (Gereffi & Memedovic, 2003; Kim et al., 2006). This was accompanied by a reduction in the GATT restrictions on the international clothing trade through the phasing out of the Multi-Fibre Agreement in the early 2000s (Karaosman et al., 2017). With these opportunities, textile and apparel production has been seen as an important route for countries seeking to industrialise (Seyoum, 2010). The influence of US trade policies led to tremendous growth of manufacturing regions in developing countries. Initiatives like the Caribbean Basin Initiative (CBI), the North American Free Trade Agreement (NAFTA), and finally, in 2000, the African Growth Opportunity Act (AGOA) provided a globalised perspective on textile and apparel production (Adagblenya, 2017; Karaosman et al., 2017).

2.2. Developing countries and the global supply chain.

Developing countries have capitalized on minimal start-up requirements, skills, and manufacturing operations, often commencing with simple fashion products such as T-shirts before progressing to more complex constructions. Goto (1989) asserted heavy dependence of developing countries' clothing imports to developed fashion markets partly due to low demand for factory-made clothing. In Africa, consumers' low demand, and the introduction of AGOA, provides an impetus for garment producers to export by. According to Ayoki (2017), over 50 percent of exports in textile and clothing come from developing countries, making the sector strategically important in terms of employment, income, and foreign exchange earnings. By 1987, the developing countries' share in world T&C exports was 52 percent, which grew to over 65 percent by 2016 (Ayoki, 2017). Developing countries still account for more than half of the world's textile exports and almost three-quarters of the world's clothing exports (Ayoki, 2017). As sourcing destinations for many developed countries, 'developing countries like Bangladesh, Mauritius, Sri Lanka and Tunisia have contributed to world exports, employment and value addition as far as fashion production is concerned' (Gereffi & Fernandez-Stark, 2014).

Typically, as the industry establishes itself, countries strengthen their local textile production capacity to create economic and social benefits (WTO, 2019). Prime examples are Turkey, Sri Lanka, Bangladesh, and Lesotho which represent both low and middle-income economies (Gereffi & Fernandez-Stark, 2014)

However, literature on the export of developing countries has concentrated on Asian developing countries, including Mainland China, India, the Republic of Korea, Hong Kong, Vietnam, Indonesia, Bangladesh, and Turkey (Gereffi & Fernandez-Stark, 2014; WTO, 2019), while there is little reflection on Africa and precisely Ghana, as observed by the authors. It is worth noting that the participation of Sub-Saharan Africa in world export is still concentrated in a few countries, such as Lesotho, Kenya, Madagascar, Mauritius, South Africa, Swaziland, and Tanzania, with Ghana conspicuously missing. The biggest challenges (Nicita et al., 2013) especially for smaller and less developed countries, include the progressive movement upwards in terms of value addition and technological integration.

It is imperative to note that Ghana's presence in the league of exporting countries is negligible, given that T&C production is comparatively low in Ghana. Even though Ghana intended to benefit from AGOA, (Osei-Assibey, 2015) demonstrates that the country's inability to take full advantage of AGOA has been due to its inability to build the productive capacity to meet the demand requirements under AGOA. Other developing countries performing under AGOA, as per the Global Competitive Index, have their successes anchored on a highly productive base, market diversification, and deliberate active government policies combined with a low cost of doing business, which is not the case in Ghana (Osei-Assibey, 2015).

However, Asian developing countries export more to major markets compared to their SSA counterparts (Gereffi & Fernandez-Stark, 2014). Scholars have attributed this trend largely to excessive Asian clothing imports by African countries, which are considered the worst threat to the existence of textile industries in Africa and hence their competitiveness (Ayoki, 2017). The abundance of many imported clothes on the local market and the demand for them make it difficult for local textile firms to expand production.

As discussed earlier, the labor-intensive manufacturing of clothing is still the deciding factor contributing to the shift of garment making from Asian countries to Africa, thus fuelling industrialisation in Africa. Ayoki (2017) asserted that the cost and labour factor is also contributing to several foreign direct investments in Africa by Asian and some industrialised nations like the US and Germany. However, low labor costs often outpace environmental measures (Cao et al., 2017). Environmental precautions are slowly gaining acceptance; for example, in Vietnam, which in 2019 was the world's seventh-largest textile exporter, there has been an increase in awareness for the triple bottom line (Nayak et al., 2019; WTO, 2019).

Developing countries have made positive contributions to global clothing supply by developing capacities to boost volume production to meet the demand of developed countries (Gereffi & Fernandez-Stark, 2014). However, this is accompanied by negative environmental and social impacts. Negative environmental and social impacts of the fashion industry practice primarily arise from the activities of industrialised countries. Propelled by fast fashion, studies reveal how the unsustainable traditional business model (take-make-dispose) has created adverse negative impacts due to overproduction and overconsumption (Barnes & Lea-greenwood, 2006; Bick et al., 2018; Cass, 1996; Gwilt & Rissanen, 2011; Hammad et al., 2019; O'Cass, 2004). The environmental and social impacts have been extensively documented. Although Ghana is not very visible in world trade reports on TC, its impact is embedded in import-driven economies, both in raw materials and finished products.

2.3. Global fashion production impacts and the Ghana factor

Ghana, as a developing country, does not engage in high-volume production. However, the fashion industry's overreliance on material imports indirectly contributes to these negative impacts that are embedded from the beginning to the end of their lifecycle (Figure 1). In Ghana,

the major fabric raw materials for garment production are cotton and polyester (Amankwah et al., 2023). As observed through informal interactions, these materials are sold by local fabric retailers who import them from predominantly Asia, the US, the UK, and some African countries, especially West African countries like Nigeria and Togo. Local textile firms primarily produce cotton fabrics. The flooding of synthetic fabrics on the local market suggests importation. However, it is not clear what sourcing strategies are adopted by these fabric retailers as certain information is considered trade secrets. Globally, both cotton and polyester production have harsh effects on the environment, which have become aggravated in recent times due to the continuing strength of demand. The following section demonstrates Ghana's involvement in unsustainable global fashion production practices as illustrated by the product lifecycle diagram (Figure 1).

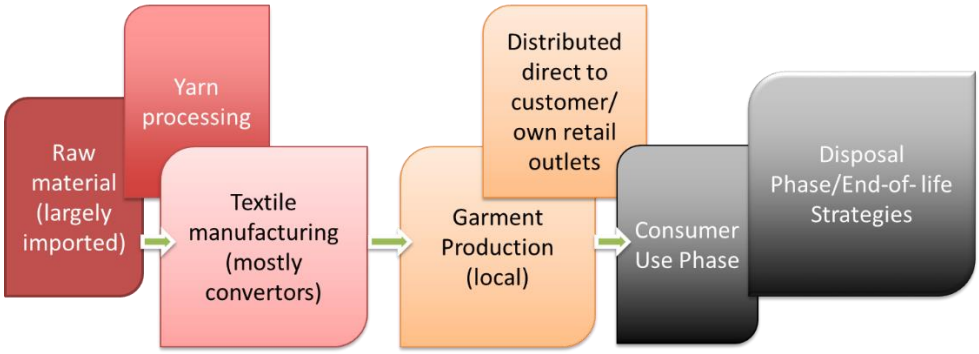

Figure 1. Product lifecycle tool adapted from (Kozlowski et al., 2012)

2.4. Raw materials

Textile production is a major contributor to climate change (Ellen MacArthur Foundation, 2015). In Ghana, the cotton used to be grown and cultivated for processing in textile mills. Hindered by bottlenecks, cotton cultivation has declined, with a few entities engaged in its production, now mainly confined to the Northern regions of Ghana. Asinyo et al. (2019) outlined these bottlenecks to include the poor attitude of farmers towards cotton production, lack of credit facilities, absence of strategic policies to regulate the cotton production sector, and inadequate funding for research. Consequently, in recent years (Asinyo et al., 2019) the sector has been characterised by low productivity levels (±500kg per hectare), and the non-intensive nature of local cotton production implies there is land available for food crop cultivation. However, the limited availability of cotton fibre on the local market means that cotton raw materials, including cotton lint and yarns, are imported. As a result, because it does not engage in local large scale raw materials production, Ghana's imports contribute to environmental problems caused by high fuel consumption and significant emissions of greenhouse gases in production and transportation (Jacometti, 2019). The cultivation of cotton requires water; however, the northern part of Ghana where the majority of cotton is grown, experiences sporadic water shortage (Abass, 2020). Water supply is not equitably distributed across the globe, and in sub-Saharan Africa, approximately 40% of the population lacks safe drinking water, according to Abass (2020). In Ghana, about 38% of the population lack access to potable water, accompanied by regional disparities. The northern part of Ghana experiences a short rainy season and an acute dry season that persists for a longer period. The main sources of water supply are streams, rivers, shallow ponds, hand-dug wells, boreholes, and rainwater. Abass (2020) emphasised that while water supply systems are generally inadequate, the problem worsens during the dry season when most of the streams dry up, and negatively impacting cotton production In Ghana.

2.5. Textile manufacturing

The majority of textile factories in Ghana are converters engaged in processing grey cotton goods into finished fabrics predominantly for the local market. The conversion process requires volumes of water used during spinning, weaving, dyeing, and colouration, as well as finishing treatments, as gleaned from the literature. However, there is a lack of rigorous data to support raw material processing in Ghana. Ghana's textile manufacturing cannot be compared in volumes with other developing countries. However, the country's reliance on imports impacts countries that are producing and exporting cotton. Cotton is viewed as the thirstiest fibre associated with water depletion (Sandin & Peters, 2018), and excessive use of water has resulted in the drying up of major rivers around the world's cotton fields (Gwilt & Rissanen, 2011; Shi & Wang, 2015), Irrigated cotton fields pose scarcity of water in the countries or regions that are considered major suppliers of cotton for garment production. It could be argued that Ghana is contributing to water scarcity by importing cotton, whether raw materials or processed fabrics.

As with cotton in Ghana, synthetic yarns are imported, predominantly from Asia, for processing. While the local textile industry lacks detailed research on the environmental cost, implications of research in other jurisdictions could partially inferred. Synthetic fibers overwhelmingly dominate apparel fibre consumption, as confirmed by Singh (2018). According to Singh, since 2000, Ghana has exported $109m worth of apparel to the US duty-free AGOA preference, mostly constituting knitted sweaters and men's shirts made from man-made fibers. Chief among this fibers is polyester, which is made from fossil fuels, is non-biodegradable, and accounts for 16 % of fibers used in clothes (ECAP, 2019). Polyester production, predominantly located in Asia, particularly China, incurs high environmental costs. Similarly, textile factories in Ghana do not engage in the manufacturing of man-made fibers but, like with cotton, they import yarns for processing into fabrics for the local market, while the fashion sector imports man-made fashion fabrics for garment production. The majority of locally produced fabrics are used for garment production for the Ghanaian consumer.

2.6. Garment production

According to Ghana Statistical Service (2015), garment production in Ghana is dominated by micro, small to medium-scale enterprises, engaged in custom-made products with relatively few ready-to-wear firms. A customer-centered approach is taken by the majority of garment producers. With this approach, consumers either bring their own purchased fabrics with suggested garment designs or discuss their preferences regarding material and style for production, along with personal body measurements. There is greater customer involvement in production making way for a co-creation approach. Compared with other fashion environments such as the United Kingdom, garments are not highly trend-driven and hence a multipurpose approach is adopted. The majority of garments produced could be worn on many different occasions by re-styling the look. Consequently, the performance, durability, and attractiveness of the product are required for extended usage over a long period. Most garments produced are delivered direct to customers Ghana Statistical Service (2015), or sold in their retail outlets as ready-to-wear. The delivery approach minimizes emissions associated with external transportation as is the case with bulk production for export. Most of these manufacturers' retail outlets are in the same vicinity as the production workshop, the longest drive could take about 30 minutes on a regular day. The manufacturing culture negates some industrial processes like technical design, lay, and cut among others. Local production practices yield deficiencies, particularly waste from fabric cut-offs during the production stage of garment manufacture, which is considered unsustainable. Waste issues in garment production are of grave concern; however, they may come in varying scales depending on the size and practice of the enterprise involved. In Ghana, the domination of micro to small-scale enterprises may have a relatively low level of waste, however significant for achieving environmental sustainability.

2.7. Garment waste and disposal categories

Yalcin-Enis et al., (2019) identify three types of waste; production waste, pre-consumer waste, and post-consumer waste. A significant contribution to waste at the production stage is fabric cut-offs. Fabric cut-offs and fabric roll-ends have been identified as a major source of waste (about 20%- waste), Gwilt and Rissanen (2011) and WRAP (2017) during the production stage of garment manufacture (Gardetti & Torres, 2013; Kavitha, 2017; Pingki et al., 2019; Šajn, 2019; WRAP, 2017; Yalcin-enis et al., 2019).

In the Ghanaian context, the small-size garment producer predominantly uses free-hand cutting due to the lack and technical know-how of modern technologies. However, fabric cut-offs are the major waste generated during production, coupled with excessive seam allowances typically ranging from 2 to 3 inches, especially at the side seams. These excessive allowances are significant for the production of some design features but contribute to waste. Again, Yalcin-Enis et al., (2019) define pre-consumer waste to encompass unsold and damaged goods at the retail level due to fabric faults and wrong colours among other factors.

Culturally, transferring clothes from one family member to another was acceptable, but the evolving nature of fashion and the projection of individual style and preferences have subdued this practice. Local retailers' unsold goods could be channelled through gifts for friends and family, and a recent data, yet to be published by the authors, confirm that donating clothes is a common practice. A considerable amount of unsold goods, although non-quantifiable, ends up in a landfill.

Moreover, in the local environment, until the families became more fragmented (Gabrielli et al., 2013), clothes could be passed from one family member to another. Current lifestyles have curtailed this practice; hence clothes are rapidly disposed of, although not at the levels found in developed economies (Fuchs, 2016).

2.8. Disposal

With rapid population and industrial growth, both developed and developing countries are now faced with the challenge of increasingly serious waste problems (Fatemi, 2009). The present fashion system gives rise to rapid product turnover and high waste outputs (Fletcher, 2008), in which unwanted clothes have three different destinations: landfill, incineration, and third-world dumping (James & Kent, 2019). The most common form of waste disposal found globally is landfilled (Gwilt & Rissanen, 2011; Liyanage & De Silva, 2018) increasing concerns about garment landfills by both developed and developing countries (Bick et al., 2018; DEFRA, 2011; Fatemi, 2009; Fuchs, 2016; Spring, 2017). This concern was highlighted by the nominee for the Ministry of Sanitation and Water Resources (Ghana) who was also the substantive Minister in 2020. The minister highlighted numerous heaps of waste all over the country, most of which are not biodegradable and the need to investigate recycling and long-term disposal options like incineration.

3. Result and discussion

3.1. Re-thinking sustainability and the circular economy in clothing production and supply

The Ellen MacArthur Foundation (2010) proposes that the clothing industry makes the transition to a circular economy. The Foundation argues that many strategies can prevent the waste levels found in the current production model. However, Fuchs (2016) argues that in Africa where poverty and scarcity are typical, the continent first has to accumulate wealth that can be maintained and conserved. Between these two positions, the World Bank (2012) focuses on sustained robust growth for the next ten years while avoiding locking economies into unsustainable patterns, preventing irreversible environmental damage, and reducing the potential for regret. Developing countries, in their bid to develop their fashion industry, have contributed to unsustainable global fashion practices. The World Bank (2012) report goes on to highlight those developing countries, which will account for the vast majority of global growth in income, infrastructure, and population in the coming decades, need to choose whether to build

right or risk facing costly policy reversals in the future. This is pivotal: sustainable issues are a global concern, and every government must find a way to respond to this urgent call of future material scarcity that could impact negatively on related businesses.

Ghana as a middle-income nation and an emerging economy with a growing fashion industry, should be awakened to the factors that trigger environmental and social concerns and must seek to promote sustainable practices in this regard. Vezzoli (2006) re-emphasises that we live in a global community whereby the crisis of globalisation is becoming increasingly interconnected and multicultural. Given the above, Ghana has the opportunity to examine issues relating to garment production and project into future possibilities of sustainable strategies, developing capable frameworks to set the groundwork for implementation policies. The Ellen MacArthur Foundation (2013) states that emerging market economies like Ghana can benefit from the fact that they are not as 'locked in' as advanced economies and have the opportunity to leapfrog straight into establishing circular setups while they build up their manufacturing base.

An excellent opportunity lies in the development of sustainable strategies that resonate with local materials and production techniques in the context of local consumers. As the world's population is expected to increase by 2030, with a rising middle class in developing countries, the Business of Fashion (BoF) and McKinsey and Company report (Amed & Berg, 2018) envisage that if consumers in developing countries buy more clothing as their purchasing power increases, clothing sales may rise significantly in the future, and Ghana must prepared for this development. Pal and Sandberg (2017) asserts that sustainable strategies like repairs and refurbishment have started worldwide and are predominantly led by niche and small-scale redesign brands. Fortunately for Ghana, fashion industry practitioners are in the small to medium scale range and are thus ideal for such initiatives, whereas larger scale firms are limited by strategic and operational complexity (Claxton & Kent, 2020).

3.2. Sustainable strategies applicable to Ghana

The negative influence of fast fashion on the fashion industry has been well-documented. (Bick et al., 2018; Dissanayake & Sinha, 2013; Kozlowski et al., 2012; Mukherjee, 2015; Vijayakumar & Robinson, 2016). In the authors' opinion, fast fashion is an alien concept in Ghana as clothes are usually worn over an extended period regardless of the trends. However, with local consumers exposed to foreign media and social media platforms, fast fashion has a presence. Although international fast fashion brands like Zara and H&M are not visible in Ghana, local brands and their direct engagement with customers enable a simulation of the fast fashion concept in a local context. Overtime, fashion consumers tend to request styles they have seen on media platforms, often with urgency that can lead to production errors, especially concerning fit issues and poor finishing that renders the garment unwearable. With predominantly micro firms characterised by low skills, garment quality, especially regarding production methods, raises concerns. Hence waste minimisation efforts must be seen as paramount.

The fashion industry's approach to sustainable development has been focused on improving eco-effectiveness rather than eco-efficiency (Bocken et al., 2014). While eco-efficiency aims to minimise waste with effects rebounding (Bocken et al., 2014), eco-effectiveness encourages the prevention and total elimination of waste through sustainable strategies such as the circular economy Ellen MacArthur Foundation (2010) and Cradle to Cradle.

These strategies embody a zero-waste circular cycle, contrasting with the prevailing linear approach (Accenture, 2016). Stahel (2016), emphasises that the circular economy is an umbrella term for business models and industrial processes that do not generate waste but instead reuse natural resources repeatedly. In this regard, the circular economy focuses on products designed for reuse, where components can be disassembled and durable reassembled into new products, worn-out components can be refurbished, and materials can be recycled (Ellen MacArthur Foundation, 2013). By doing so, vast amounts of material are reclaimed for use rather than extracting virgin materials.

The literature points to the overwhelming support for the circular economy initiative as an attractive response to the call for sustainable fashion practices throughout the world (Accenture, 2016; Fuchs, 2016; Kirchherr et al., 2017; Koszewska, 2018; Stahel, 2016). It is reasonable to acknowledge that the adoption of a circular economy could be advantageous in the Ghanaian fashion environment and could reduce local fashion producers' over-reliance on imported virgin raw materials, greatly impacting global sustainability drives.

Among the six major dimensions of circular economy models identified by (Lüdeke-Freund et al., 2018), repair and maintenance, reuse, refurbishment, and recycling are the most relevant and applicable in Ghana. These methods of extending the longevity of clothing are practiced in Ghanaian culture, although they remain largely undocumented. It is a practice, for instance, for new brides in some tribes in Ghana to be given sewing machines as part of the requirements for the ceremony, to aid in mending family clothes. Additionally, clothes are passed down to younger or close family members as a family treasure or to avoid having to make a new purchase. Furthermore, it is customary for customers to visit the producer of a particular garment and request alterations such as taking in or letting out seams due to a change in body size, replacing a damaged zipper or button, or mending a torn garment, among other tasks. Transforming these practices into business models will require attention to several drivers including education, implementation model, capital investment, and developing a pool of workforce among others.

Fuchs (2016), extending the business models developed by Lacy and Rutqvist (2015), identifies the application of recycling and recovery with two variations. Firstly, recovering end-of-life products to recapture value in closed loops (a company's products) or open loops (any company's products) considers the fact that there is an abundance of second-hand clothes/fabrics on various markets across the country from which material recovery is possible. The second route involves the recovery of waste and by-products from a company's production process and operations to recapture value.

Own-brand retail stores are gradually emerging, especially in major cities such as Accra and Kumasi. Given that majority of producers fall within micro, small to medium enterprises (Ghana Statistical Service, 2015), the volumes produced are not significant and lack statistical evidence due to the overconcentration of research activities on production techniques. Furthermore, implementation requires technologies like DART, which help to trace materials and identify their properties, and optical Near Infra-Red (NIR) for detecting fabric composition and colour, which are critical (Pal & Sandberg, 2017). These are technologies that may not be readily available for use in the local environment and could hamper related activities. Considering the sizes and operating capacities of the firms in question, investing in such equipment is unlikely, compounded by the lack of needed skills for implementation.

Additionally, the role of government in the fashion industry in Ghana is yet to gain momentum, and hence producers may have to bear the responsibility for their actions. With sustainability emerging as a concept in Ghana, adopting circular strategies in principle is attractive; however, it technically requires a significant effort from both producers and government to embrace its principles and requirement for a positive impact.

Changes towards product ownership provide a further opportunity for sustainable development through fashion rental and, more broadly, the servitisation concept developed from Product Service Systems (PSS) (Vezzoli et al., 2018). Two types of PSS can be adopted: product-oriented PSS, which deals with maintenance and extended warranty, and user-oriented PSS, which encourages product leasing, renting, and pay-per-service models. For example, Rent the Runway (Fuchs, 2016) encourages its customers to be owners of their clothes and not consumers, therefore offering a free do-it-yourself guide to repairing their clothes. However, further research is needed into the cultural environment within the study area to gauge consumers' willingness, or otherwise, to welcome the latter (use oriented) approach and the mitigation factors that will affect its implementation.

Product-oriented PSS presents a more practical approach, following the product life extension model of Lacy and Rutqvist (2015), local firms can assist their customers in extending product life through repairs or guidelines on how to best to care for the product. Under product life extension concept, the value of the fabric could be maintained or created through repairs, upgrades, or refurbishment. It should be noted that in these processes, significant reworking of the product is often carried out to predominantly restore or add value, which reduces the original value retention of the product. Furthermore, recreating new value requires labour. In this context, local artisan groups can be integrated, as proposed by Bocken et al. (2014), under the archetype 'repurpose for environment and society'. However, there are downsides, such as the added cost of sensitisation programmes for both producers and consumers, training workforce, the providing financial support for model start-ups, among other circular strategies, which are bound to be comparatively expensive. Local fashion producers should expect additional costs if they embrace these strategies.

It is worth noting that some young contemporary local designers are engaged strategies like upcycling, refurbishment, and repair; however, without a business model that reflects their practice sustainably. There is scare literature on sustainable strategies in Ghana fashion industry, requiring inquiry to document strategies welcomed by both producers and consumers to aid implementation strategies for sustainability. Based on the narrative so far, the diagram (Fig 2) sheds light on strategies under the PSS asserted by Vezzoli et al. (2018) likely to be welcomed, thus requiring further investigation.

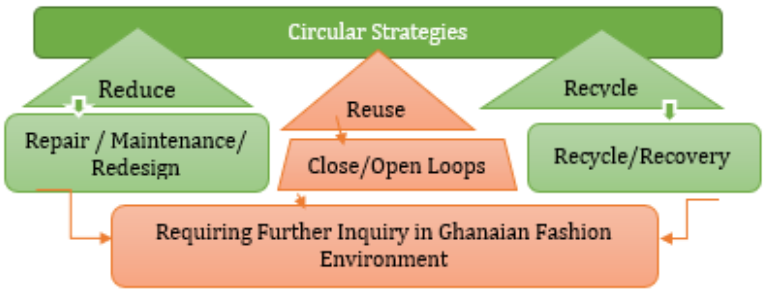

Figure 2. Sustainable strategies requiring further research for adoption in Ghana Source, Authors

4. Conclusion

Ghana as a developing country, has had the opportunity to experience AGOA but is faces bottlenecks, as discussed earlier, preventing it from emerging as a significant exporter of textiles and clothing, unlike its counterparts in Asia that have leveraged relaxed trade policies. Instead, Ghana finds itself among nations that import, thereby contributing to adverse environmental impacts from textile and fashion production.

In embracing sustainability, each country is expected to assess its activities in the context of geographical, socio-cultural, and value systems dimensions, among others, to select and sustain desired strategies. Ghana must endeavour to play a positive role in contributing to the UN development goals agenda. It is noteworthy that some young contemporary designers in Ghana have begun to integrate sustainability into their approach. These are personal business initiatives yet to receive government commitment and support for effective operation. Such initiatives include replacing synthetic dyes with natural alternatives, using locally handcrafted fabrics, upcycling, reusing materials, and repurposing among others.

With a supportive environment, including positive cultural acceptance of sustainable strategies and government involvement, significant progress could be made in addressing the cautions highlighted by the World Bank (2012) while meeting the needs of current and future generations'. Government awareness of the textile and garment waste issues would position local fashion producers to adopt sustainable strategies and mitigate further degradation caused by waste generation.

The argument of scarce resources and technological constraints attributed to developing countries cannot be an excuse to delay embracing sustainable practices in the local fashion industry. Therefore, the notion of 'grow now and clean later', opposed by the World Bank (2012), may lead to serious unsustainable practices for the country, which could be costly and regrettable. Embracing sustainable strategies such as the circular economy requires the engagement of a wider set of players, including suppliers. Ghana's current position is disadvantaged; therefore, a critical examination to streamline loopholes will pave the way for embracing sustainable fashion in Ghana.

The local fashion industry's major challenge, aside from limited fabric choices, is the importation of second-hand clothing. Rodgers (2015) reported that Ghana is one of the major destinations of used clothing from the UK, a practice that has had a negative impact on local industries. Although second-hand trade may be considered a challenge, in this current study, it appears to serve as a vital resource for the adoption of sustainable strategies such as refurbishment and upcycling. Second-hand garments can represent a valuable recourse that could be repurpose for use in new applications.

While second-hand garments themselves my pose challenges due to their fibre contents (which does not necessarily make products made by them sustainable), they can still offer a new source of materials. Imported second-hand clothes which are prevalent in market across Ghana, can provide a regenerative resource base and alleviate the waste associated with unsold goods from this trade, reducing the reliance on virgin raw materials by local designers.

The selection and implementation of sustainable strategies will require operational models to ensure sustainability. Consequently, the review recommends studying culturally friendly strategies and subsequently developing models for their effective and efficient implementation.

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